



# SDG REPORT 2023





Sustainable Development Goals





# SDG Report 2023



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# SDG Report 2023 Key Highlights

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Dr. Olivia  
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# MESSAGE FROM THE PRESIDENT/CEO



As institutional administrators and groomers of future leaders, we at MMU are concerned with growth. Growth is the essential component of a progressive civilization. Whenever anyone aspires for improvement or success, growth is almost always the metric used to gauge if the target has been hit, regardless of whether the endeavor is professional or personal.

However, growth of any kind requires resources. Whether the growth in question is in terms of monetary profit, better academic results, enhanced research output in academia, or anything else, resource consumption is an absolute necessity. Faced with such a restriction, we can only use up the resources our planet has to offer, be it from the ground, rivers, seas, or from the very air that surround us. We take and consume those that we need, as well as some that don't. We do it continuously, around the clock, across the globe. Every time we take, our resources dwindle, and some to never return. It will only be a matter of time before we run out.

Thankfully, in recent years, humanity has become increasingly aware of the need to be sensible in how it consumes resources. Awareness of the need for sustainability has come to the fore, and, as part of a global concerted effort, it is being expressed as the Sustainable Development Goals, or SDG. Essentially, it is about taking only what we need, leaving enough for tomorrow.

It is also about making sure that everyone has the chance to benefit from all available resources. We have figured out our intent, so what remains is the implementation.

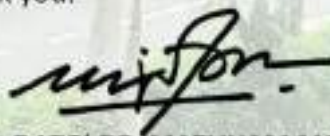
To maximize the chances of success, the SDG has been spread across seventeen goals, so that every individual or organization could find ways that would suit their situation the best.

In this report, we present the collective effort of MMU citizens, students, and staff alike, as they attempt to implement the SDG to the best of their abilities within their respective direct spheres of influence. We had advised our students and staff to try and incorporate the SDG into their events and activities whenever possible, with the hope that it would become a habit, and eventually evolve into a culture.

In my opinion, throughout 2023, they have done quite well, all things considered. Everyone is learning, and no one gets it right the first time or even the second, or third time. No two events or initiatives are the same, so what truly counts is the effort and intent. As long as we keep trying, we will figure it out, and hopefully make our planet a paradise once more. This report will testify to MMU's efforts in helping realize that grand goal. Hopefully, it will also serve as an inspiration to other like-minded people.

May God help us, and grant us the success we seek.

Thank you.



**PROF. DATO' DR. MAZLIHAM MOHD SU'UD**  
President/CEO of Multimedia University

1 NO  
POVERTY



2 ZERO  
HUNGER



3 GOOD HEALTH  
AND WELL-BEING



4 QUALITY  
EDUCATION



5 GENDER  
EQUALITY



6 CLEAN WATER  
AND SANITATION



7 AFFORDABLE AND  
CLEAN ENERGY



8 DECENT WORK AND  
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



10 REDUCED  
INEQUALITIES



11 SUSTAINABLE CITIES  
AND COMMUNITIES



12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



13 CLIMATE  
ACTION



14 LIFE  
BELOW WATER



15 LIFE  
ON LAND



16 PEACE, JUSTICE  
AND STRONG  
INSTITUTIONS



17 PARTNERSHIPS  
FOR THE GOALS



SUSTAINABLE  
DEVELOPMENT  
GOALS





**Highlights of  
Activities, Events,  
and Initiatives in  
2023**



**NO POVERTY**

**“End poverty in all its forms,  
everywhere.”**

*MMU's commitment to University Social Responsibility (USR) not only enhances the academic experience but also cultivates a sense of civic duty among its students. By participating in USR activities, students develop a deeper understanding of social issues and are empowered to address them through tangible actions. This not only benefits the underprivileged communities served by these activities but also enriches the personal and professional growth of the students themselves. Ultimately, MMU's emphasis on USR helps produce well-rounded individuals who are not only academically proficient but also socially conscious and proactive in making positive contributions to society.*

## MMU Joins State Government's Flood Relief Mission in Johor



On 19 March 2023, a group of 20 staff and students from Multimedia University (MMU) participated in Misi Bantuan Pasca Banjir Kerajaan Negeri Melaka, joining other state agencies to aid flood victims in Johor. The flag-off ceremony was officiated by Exco Perumahan, Kerajaan Tempatan & Alam Sekitar, Negeri Melaka, YB Datuk Zaidi Attan.

The students travelled to Kampung Parit Awang, Mukim 7, Tg Sembrong, Yong Peng, Johor, where they provided assistance in cleaning homes affected by the flood.

In addition, MMU also contributed relief supplies such as rice, cooking oil, and other necessities, hoping to ease the burden of those affected by the disaster.

The joint mission championed by Majlis Bandaraya Melaka Bersejarah (MBMB) with other state agencies was a great success, bringing much-needed relief to the flood victims in Johor. MMU is proud of its staff and students' contributions to this noble cause and hopes to continue supporting such initiatives in the future.

## MMU Grand Iftar Brings Campus Community Together

Multimedia University (MMU) hosted the Grand Iftar (Iftar Perdana) at the Cyberjaya and Melaka campuses on 12 April and 13 April 2023 respectively. This flagship event was attended by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU together with invited guests as well as staff and students.

where the audience was enlightened on the importance of charitable giving and zakat and others. YUM also received the Zakat payment from representatives of the company and organisation, who also attended the programme.

Prior to the Grand Iftar, Prof. Dato' Mazliham also had the opportunity to make a Ramadan must-have dish, MMU Bubur Berlauk with his own recipe. More than 2000 containers were made and distributed at both campuses.

This event is significant for the MMU community to be together especially during the holy month of Ramadan, in contrast to when the mass gathering was not allowed during the COVID-19 pandemic.





## MMU Volunteers Join Post-Flood Relief Mission in Terengganu

A total of 40 volunteers comprising MMU staff and students from Cyberjaya & Melaka campuses participated

in the post-flood relief mission at Kampung La, Terengganu. The programme was organised by Sahabat Sukarelawan with the support of MMU Superheroes & sponsored by Yayasan Universiti Multimedia (YUM)

Surau Al Hidayah, MESRA, BAKIT, Telekom Malaysia (TM) and honourable individual donors.

The volunteers cleaned Sekolah Kebangsaan Kampung La and a few houses and shop lots that were affected at Felda Tenang. The team also handed over hygiene kits and groceries to 158 victims which was presented by Prof. Dr. Ir. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoint (VP MEET), and Mr. Izad Ismail, Director of YUM who also joined the mission. This mission signifies the university's commitment to engage and help society through the university social responsibility (USR) initiative.



## YUM Hosts 'Hari Terbuka Zakat' at Cyberjaya Campus

Yayasan Universiti Multimedia (YUM) hosted a two-day event of 'Hari Terbuka' in conjunction with the year-end zakat campaign from 21 until 22 December 2022 at Cyberjaya campus. The event was also jointly organised by Koperasi Telekom Berhad

(KOTA MAS) for the MMU community to get consultation for their Zakat payment and revision of *Zakat Tafsiran* as well as for payment zakat deduction. The event also served as a platform for attendees to explore KOTA MAS products and benefits for the members.







## ZERO HUNGER

# “End hunger, achieve food security and improve nutrition & promote sustainable agriculture.”

*Acknowledging the continuous necessity of food for human well-being, the university takes proactive steps to address food scarcity and hunger among its community members.*

*Understanding the potential long-term effects of inadequate nutrition, the university ensures access to sufficient food and nutrition for its citizens, recognizing that food insecurity can be a persistent challenge even in the absence of emergencies.*

## FOE Conducts 8 IoT-Based Smart Farming Programmes



The Faculty of Engineering (FOE) orchestrated eight Knowledge Transfer Projects (KTP) centered on the IoT-based Smart Farming concept, extending their knowledge to eight communities, namely: Sekolah Menengah Kebangsaan (SMK) Seri Saujana, SMK Kajang Utama, SMK St. Gabriel, SMK Bandar Puncak Jalil, SMK Cyberjaya, SMK Seri Permaisuri, Institut Pendidikan Guru Kampus Sultan Abdul Halim and Kebun Komuniti Perbadanan Putrajaya.

Leading this knowledge transfer programme (KTP) initiative were Ir. Dr. Siva Priya, Ir. Prof. Dr. Fabian Kung, and Dr. Lo Yew Chiong. The students at the Multimedia University Smart Technology Team (MUST Team), comprising team leader Tung Tze Yang, advisor Asif Shaik, and team members Lim Zing, Haffiz Rafi, Chee Rui, Lee Joe Ann, Khoo Jia Ying, and Quah Ming Yi, developed innovative smart farming systems and conducted workshops for the eight institutions. The project was financially sponsored by MMU, IEEE Try Engineering STEM Fund 2023 and the IEEE ComSoc/VTS Malaysia Chapter.

Eight IoT-based smart farming systems were meticulously tailored to meet the unique requirements of each institution, boasting a range of functionalities, from monitoring plant health to implementing smart irrigation systems, all with the goal of enhancing crop yields. Students and educators at these institutions can now access and manage their smart farms through a cloud-hosted dashboard. These systems are powered by the MMU FOE IoT Module, an in-house creation by Prof. Fabian Kung and students from the MUST Team.

The KTP also organised workshops, empowering students, and teachers with foundational knowledge of smart farming and Arduino fundamentals. Participants delved into the fundamental theory of IoT systems and engaged in hands-on experiments with Arduino microcontrollers, sensors, programming, and basic electronic circuits. As an added boost to kickstart their journey into the world of STEM.

MMU FOE IoT modules and Arduino learning kits were generously presented to the institutions. Thanks to the collaborative efforts of Dr. Tan Wooi Haw, Dr. Lee It Ee, Prof. Mardeni, Dr. Azwan, Dr. Foo Yee Loo, Dr. Sin Yew Keong, Dr. Cham Chin Leei, along with the support of ten student volunteers and FOE lab technicians Mr Mohd Fazly Mahamud, Mr Muhammad Hamdi Md Jamil and Mr Khairul Fahmy Assha'ari, over 500 students and teachers have benefited from this visionary initiative.



## Students and Staff Present Contribution and Bubur Lambuk to Asnaf in Melaka

On 8 April 2023, MMU students together with staff organised 'Sweet Charity' programme (Menyantuni Asnaf & Agihan Bubur Lambuk) at Masjid Al-Abrar, Semabok Melaka. The programme was graced by Datuk Hj. Shadan Hj. Othman, Mayor of Melaka Historic City Council (MBMB) and also present was Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU.



The students prepared the *bubur lambuk* together with the distinguished guests and distributed the dish to the community. On top of that, Datuk Hj. Shadan and Prof. Dato' Mazliham also presented necessities items to the Asnaf group during the event. Facilitated by Student Lifestyle & Experience (STyLE), the programme will continue with other series of events including Street Charity and Singgah Sahur, Konvoi Ramadan, Iftar Perdana and others in an effort to assist those who are in need: Asnaf and homeless people.



## MMU and IDEACO Ink Collaboration Agreement for "JustGood- MMU Smart Precision Agriculture Junior Growers Programme"

Multimedia University (MMU) and Idea Company Sdn. Bhd. (IDEACO) continue to further strengthen the link via a collaboration agreement signing ceremony on 10 April 2023 at the JustGood Roots Smart Farm, Rawang, Selangor. The agreement was inked by MMU President, Prof. Dato' Dr. Mazliham Mohd Su'ud and Managing Director of IDEACO, Mr. Zachary Aman. The pact signifies the collaborative effort between both parties in

implementing "JustGood-MMU Smart Precision Agriculture Junior Growers Programme", where MMU will assist in terms of training delivery by experts from the Faculty of Management (FOM). The programme is designed to provide an inclusive, conducive, and practical environment for students and graduates to experience professional learning and obtain new skills and competencies.



## MMU Students Pitch the Innovative Solutions at DIYC Business Plan Challenge 2023 Project: Wasted to Wanted

MMU Trailblazer, our student team from the Faculty of Engineering (FOE) was ranked among the Top 30 at the Grand Finale pitching competition of the Diversity and Inclusion Movement by Youth (DIYC) Business Plan Challenge 2023, recently.

The team pitched their innovative solution, “Wasted to Wanted” which connects food businesses with excess food to buyers at a discounted rate, incentivising purchase and most importantly, reducing food waste at Hotel Sunway, Iskandar Puteri Johor Bahru.



Supervised by Ms. Azrena Mohd Noor from the Faculty of Management, the team members consisted of Thaniges Kumar, Lim Zing, Lim Zhi Pin, Quah Ming Yi, and Nur Irdina Md Safuan also came up with the “Trash to Nature’s Treasure”, a service to buy kitchen waste from households and businesses and turn them into compost to be sold to farmers. This initiative also helps to reduce waste and promote sustainable agriculture.

## MMU and MARDI Sign Pact to Formalise Collaboration and Partnership

On 6 April 2023, Multimedia University (MMU) and Malaysian Agricultural Research and Development Institute (MARDI) formalised their collaboration and partnership through a Memorandum of Understanding at the Cyberjaya campus. The pact was inked by Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU and Dato’ Dr. Mohamad Zabawi Abdul Ghani, Director General of MARDI.

MMU and MARDI will be cooperating again under the Entrepreneur Cadetship or known as eCadet, where it serves as a platform to groom students into market-ready entrepreneurial talents among MMU students.

MMU and MARDI have been working together in nurturing young agropreneurs under AGORA programme as well as knowledge sharing with the students.





**FOM  
Academics  
Involve in  
Grooming  
Future Modern  
Smart Farmers/  
Agropreneurs**

Two academics from the Faculty of Management (FOM) namely Dr. Mohd Fairuz Abd Rahim and Dr Ong Jeen Wei delivered a training module on Design Thinking and Innovation at the JustGood Roots Smart Farm, Bestari Jaya, Selangor from 13 until 14 May 2023.

This is part of the partnership between MMU and Idea Company Sdn Bhd (owner of the JustGood brand) to groom future modern farmers/agropreneurs in the “Just-Good – MMU Smart Precision Agriculture Junior Growers Program”. The enthusiastic participants were exposed to the concepts and tools of Design Thinking, TRIZ System Analysis, Root Cause Analysis, Value Proposition Canvas (VPC), TRIZ Inventive Principles, and many more.

As part of their problem-based learning, the participants are also working on a mini project to identify and propose improvements at their smart farm by applying what they have learned in the training session.







## GOOD HEALTH AND WELL-BEING

**“Ensure healthy lives and promote, well-being for all at all ages.”**

*In line with its commitment to holistic well-being, MMU goes beyond mere promotion of physical activity by offering a wide array of wellness resources and support services. These include on-campus fitness facilities, counselling services, nutritional guidance programs, and mindfulness workshops.*

*By fostering a comprehensive approach to health and wellness, MMU ensures that its staff, students, and surrounding communities have the tools and support they need to thrive physically, mentally, and emotionally.*

## FOMS Initiates Its Golden Lounge Programme



Faculty of Management Society (FOMS) launched its Golden Lounge, a virtual programme that benefits students’ mental well-being and served as an avenue for providing relaxation and comfort to students, especially when dealing with academic stress. Inspired by the infamous KLIA Golden Lounge, known for its world-class hospitality and travel experience, this programme features FOM academics as panelists and two students as moderators to share their insights on selected interesting and engaging topics.

The first episode carried the theme of “Well-Being”, and the discussion revolved around topics related to 3Cs (calories, coffee, and chocolate) by Ms. Norzarina Md Yatim and Dr. Abdul Aziz Ahmad. The panelists shared their perspectives and knowledge that counting calories can lead to stress and eating disorders as well as the importance of coffee and chocolate in one’s lifestyle. At the end of the events, the audience was also engaged in three rounds of raffles and won cash prizes.



## Industrial Speaker Shares Tips to Remain Resilient and Agile

On 16 February 2023, a total of 11 staff from the Melaka and Cyberjaya campuses attended the industrial talk session on ‘Mindfulness for Resilience and Agility’. Organised by the Faculty of Engineering and Technology (FET), the session was conducted by Mr. Sundaresh Aw Yang, Chief Executive Officer (CEO) of Tlex, Malaysia & Asia Pacific. The event was conducted physically in Melaka and virtually for Cyberjaya.

In view of the new normal, many people feel that their lives have never been so busy and their physical and mental health have declined due to stress. In his talk, Mr. Sundaresh shared how to deal with stress and practice some exercises for us to regain positive energy and ultimately, to increase work productivity.





## FOB Student Takes Part in #AWMUN Conference

Jeffrey Quek Shue Yew, our student from the Faculty of Business (FOB) took part in the Asia World Model United Nations (AWMUN) conference from 18 until 19 February 2023. The virtual conference gathered many participants from different countries, and it served as an avenue to develop talents including leadership, debating, negotiation, teamwork, and others.

Jeffrey and other participants were also exposed to fascinating topics during the conference such as 'Addressing The Mental Health Crisis of Children and Adolescents', 'The After Effect of COVID-19: Children and Poverty', and many more. The AWMUN is a series of programmes with the goals of educating the participants about world issues

and promoting peace as well as the United Nations's role through cooperation and diplomacy. It is hoped that the participants gained valuable insights, improved their personal development, built new connections, and others



## FOB Lecturer and Student Receive Award at MWRN 2023

Dr. Audrey Lim Li Chin, our academic staff from the Faculty of Business (FOB) and Certified Financial Planner (CFP) received an award in recognising her efforts as an external educational advisor for the CFP programme during CFP/IFP Certification Program Students Recognition Night (MWRN) 2023 on 4 March 2023 in the Royale Chulan Damansara.

On top of that, Dr. Audrey and her Mphil research assistant, Ms. Ong Lee Hsien, CFP were invited to the event by Max Wealth Education Sdn Bhd to strengthen their collaboration with MMU on their research project under the Malaysia Fundamental Research Grant Scheme (FRGS) titled "A Framework for Enhancement of Retirement Planning Via Fintech Adoption with Mental Health Among Malaysians."

The event was graced by Mr. Paul Low, President of the Financial Planning Association of Malaysia (FPAM). The event was also attended by many leaders from the finance industry and CFP/IFP recipients.



## Staff and Students Support Health Screening Programme



A Health Screening Programme was held at both Melaka and Cyberjaya campuses on 14 March and 21 March 2023 respectively. The event received a warm response from staff and students. This initiative was conducted by Human Capital Management (HCM) and PMCare for free in an effort to engage the healthy lifestyle among the community and took ownership of their own health.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU also attended the session and presented the certificate of appreciation to those who were involved with the event including the collaborators namely KPJ Kajang Specialist Hospital, Beacon Hospital, Columbia Asia, Physiomobile, Kajang Plaza Medical Centre, Mahsa Health, Foot Soul Solutions and others.

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## Three MMU Athletes Represent Malaysia in SEA Games 2023



Three MMU athletes namely Low Zheng Yong from the Faculty of Information Science and Technology (FIST), Chua Jia Tien from the Faculty of Law (FOL) and Eshwant Singh (FOL) represented the Malaysian team in the 32nd Southeast Asian Games (SEA) Games in Phnom Penh, Cambodia from 5 May until 17 May 2023. Zheng Yong competed in Swimming, while Jia Tien and Eshwant participated in Chess.

The athletes had the opportunity to attend 'Meet and Greet Session' with MMU President, Prof. Dato' Dr. Mazliham Mohd Su'ud at the Melaka campus on 5 April 2023. Prof. Dato' shared his words of encouragement to do their absolute best in the competition.



## Alumna Shares on Essential First Aid, CPR & AED Workshop

A workshop on Essential First Aid, CPR & AED was organised by Student Experience and Entrepreneurship Development (SEED) on 5 July 2023 at the Melaka campus. A total of 32 staff took part in the workshop, which was conducted by Ms. Azliana Azizan our Permata Dunia from the Faculty of Engineering & Technology (FET). Graduated in 2011, Ms. Azliana has 10 years of experience in the manufacturing field including in the electronic and automotive industry. Starting off as a maintenance engineer, she is currently the Head of Safety, Health, and Environment for Honda Malaysia Sdn Bhd.



The workshop met its goal as the CPR for adults, children, and participants received insightful infants with recommended knowledge on the 2020 AHA approach. It is hoped that more Guidelines Update for CPR and engagements between ECC, as well as to understand Permata Dunia and MMU the components of high-quality could be conducted in the future.

## FOB Student Wins Second Prize in Creative Writing Competition

Jeffrey Quek Shue Yew, our final student from the Faculty of Business (FOB) clinched the second prize in the creative writing competition on 22 July 2023. The competition was jointly organised by Melaka Blood Bank and Jabatan Kesihatan Negeri Melaka in conjunction with the Melaka State Level World's Blood Donors Day.

Through his creative message titled "Celebrate World Blood Donation Day! Embrace the power of giving. Unite to save lives", Jeffrey received the prize and certificate from Datuk Dr. Rusdi Abd Rahman, Melaka State Health Department Director

and accompanied by Dr. Zaharimah Abdul Kadir, Hospital Melaka Director during the award giving ceremony.

The competition served as a platform for aspiring writers and advocates to contribute to the

noble cause of saving lives through blood donation. It also emphasises on the life-saving potential of this selfless act, where a single blood donation can save up to three lives





## MMU Students Get Shortlisted in the Nyawa Mental Health Case Public Policy Competition

The knowledge and insights gained from these experts have been truly transformative for the team. Engaging with like-minded individuals and collaborating with talented peers from diverse backgrounds has further fueled their motivation to create a lasting impact on mental health in Malaysia. The opportunity to exchange ideas and perspectives with fellow participants has broadened their understanding of the challenges faced by the community and has ignited their creativity in developing innovative policy solutions.

A team that consisted of three MMU students namely Dashania Elvira Gregory from the Faculty of Business (FOB), Yogha Ruepini Kanagalingam from the Faculty of Law (FOL), Shambhavi Jeevananthan FOL and Nian Wan Tan from IMU-Pharmacy achieved a remarkable feat in the Nyawa Mental Health Case Public Policy Competition, on 12 August. They were selected as one of the Top 10 groups out of 50 teams for the finals. The team earned the privilege to attend the highly anticipated #MHPCC2023 workshop organised by Nyawa (Mental Health Aid Association). Throughout the workshop, the team has had the extraordinary opportunity to learn from

esteemed experts and influential changemakers in the field of mental health policy.

The list of renowned speakers includes YB Syed Saddiq, a Member of Parliament and an alumnus of the prestigious Lee Kuan Yew School of Public Policy National University of Singapore; Dr Shermaine Sim, Mental Health and Psychosocial Support Consultant at Unicef Malaysia; Dr Nurashikin Ibrahim, Consultant Public Health Physician at the National Center of Excellence For Mental Health, Ministry of Health; Miss Nalleita Omar, Former Policy Advisor and Speechwriter to the Prime Minister of Malaysia; and Dr Ryan, Program Director at Pusat Komus.





## FIST Student Win iTANK 2023 under Health Category

Mathavan A/L Krishnan, our student from the Faculty of Information Science and Technology (FIST), and his team members from other universities namely Sarviesh S/O Balasundram from Universiti Malaya (UM) and Surenthar Rajamohan from Universiti Tun Hussein Onn Malaysia (UTHM) emerged champion in the Intersarsity Think Tank (iTANK) 2023 under Health category on 6 August 2023.

iTANK 2023 is the first and largest student-led ASEAN think-tank competition, which empowers Malaysian and ASEAN undergraduates to create digital or

tangible solutions. The competition was divided into two stages with 5 categories specifically Health, Education, Waste Management, Transportation, and Environment. The participating teams from local universities submitted their video pitching and demonstrated the prototype for the first stage.

The second stage witnessed three finalists from each category compete physically at Universiti Sains Malaysia (USM) on 5th August 2023. Mentored by Mr. Vincent Chan from the Faculty of Business (FOB), the team proposed Future Journey as the solution to curb stress and mental

health among students that is caused by a lack of career awareness and guidance. Future Journey is an immersive gamified platform that can evaluate, analyse, recommend, and assist students to craft their career journey.



## MMU Teams Win Big at MASISWA Bowling Championship 2023

MMU bowlers for won the Men's Double and Women's Double Category and second place for the Women's Double at the MASISWA Bowling Championship 2023. The championship was held at Sunway Megalanes, Sunway Pyramid from 26 until 27 July 2023.

Muhammad Aimeer Shah Mohd Azmi from the Faculty of Computing and Informatics (FCI) and Muhammad Adib Danial Azizan from the Faculty of Management (FOM) beat Management Science University (MSU)

team for the Men's Double category. Noraleya Maisarah Nuhizam and Nur Adriana Wan Fikri from FCI won the Women's Double category followed by another MMU team namely

Nur Alya Natasha Azhar from the Faculty of Business (FOB) and Nurul Aisyah Abd Halim from the Faculty of Law (FOL) secured the second place in the same category.



## MESRA's Preparatory Course Cultivates Archery Proficiency for MMU Sports Fiesta 2023

Multimedia University Employee Sport & Recreational Alliance or MESRA took a proactive approach by organising a complimentary foundational archery course from 1 until 11

August 2023. Open to all personnel, this initiative helped to provide essential safety protocols and procedural knowledge of archery.

This course also assisted the staff in preparing for the Archery Competition in the MMU Sports Fiesta on 17 August 2023. For Cyberjaya staff, the training session was led by Ms. Maizlina Sadikin, who represented Malaysia and earned the gold medal at the 4th World Nomad Games in Iznik, Turkiye in 2022. In parallel, the session at MMU Melaka was overseen by Dr. Afandi Yusof, President of MESRA club. By offering this foundational archery course, MESRA not only ensures the safety of the participants but also enhances their skills and knowledge.



## MMU Students Illuminate St. John Ambulance Triumph on International Stage

St. John Ambulance Melaka, Malaysia clinched the Championship title at the 33rd Singapore-Malaysia Ambulance Adult Competitions held on 22 July 2023, in Singapore. Highlighting the exceptional training and skills nurtured at Multimedia University (MMU), three out of the five victorious representatives were from MMU's Melaka Campus: Lee Wen Pei (Faculty of Business), Joshua Pau (Faculty of Engineering and Technology) and Soh Yi Xiang (Faculty of Information Science and Technology). This remarkable achievement is not only a testament to the unwavering dedication of the coaching team, recognised by



St. John Commander Madam Chua Yen Nie, but also a reflection of the vital role played by MMU in honing future healthcare and community service leaders.

Furthermore, the youth team's triumph in the 2nd Asia-Pacific Regional Youth Competition First Aid Competition underscores Malaysia's exceptional youth training program, with hopes of inspiring more young individuals to join the ranks of St. John

Ambulance and contribute to life-saving efforts.

As Madam Chua Yen Nie seeks the involvement of medical professionals in guiding these youth teams to even greater heights, St. John Ambulance warmly welcomes interested students, offering them the chance to participate in the St. John Ambulance Character Building class at Multimedia University, where life-saving skills are taught hand in hand with values of compassion and leadership.



## MMU Athletes Win International and National Competitions

Chua Jia Tien, our student from the Faculty of Law (FOL) clinched the gold medal at the Blue Chevaliers International Chess Open Phuket 2023. Representing Malaysia, Jia Tien beat participants from Russia, Philippines, Singapore, Thailand, and others under the Women's category. Organised by Thailand Chess Association, the event was held from 23 until 29 July 2023 in Phuket, Thailand. Another achievement was recorded by our athletes when Low Zhen Yong from the Faculty of Information Science and Technology (FIST) and Christy Teh Xing Ti from FOL secured 5 gold and 1 silver medal at the MASISWA Swimming Championship 2023

on 13 August 2023. Christy won three medals for 100m freestyle, 100m backstroke, and 50m backstroke while Zhen Yong clinched two gold medals for 200m Butterfly, 100m Butterfly, and a silver medal for 50m Butterfly. For the record, Zhen Yong is a national swimmer and represented the Malaysia team in the SEA Games in Cambodia last May.



## MMU and KLFA Join Forces to Nurture Exceptional Football Talents

On 4 September 2023, Multimedia University (MMU) and the Kuala Lumpur Football Association (KLFA) inked a Memorandum of Understanding (MoU) at the Cyberjaya campus. This pact marked the first-ever partnership between the university and a professional football association. The MoU was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Mr. Syed Yazid Syed Omar, Vice President of KLFA.

Through this collaboration, KLFA will share expertise in coaching, fitness, physiotherapy, and tactics, aiming to boost the level of higher education-level football competitions. It also assists in enhancing the development of MMU students, particularly those involved with the MMU Football Club (MMUFC), and potentially nurturing highly educated professional football talent.



## Merdeka Hiking 2023 Unites Participants in a Day of Camaraderie and Exploration

On 20 August 2023, a total of 54 individuals gathered to take part in the Merdeka Hiking 2023 at Beruang Hill in Ayer Keroh, Melaka. Organised by the Students' College Committee (SCC), this event aimed to celebrate unity and togetherness in conjunction with the upcoming National Day. The serene and lush surroundings of Beruang Hill served as the perfect place for this event, where participants from diverse backgrounds came together to embark on a journey of camaraderie and exploration. Led by the SCC, the event saw the participation of 47 enthusiastic hostel students and was accompanied by 7 dedicated staff members from the hostel itself.



Additionally, members of Student Lifestyle & Experience (STyLE), lent their support by guiding and assisting the participants throughout the hike. The main objective of the Merdeka Hiking 2023 event was to foster a sense of unity among the participants, transcending national boundaries. In an era where connections are more important than ever, this initiative served as a platform for individuals to form lasting bonds regardless of their nationality or origin. The event successfully managed to bridge the gap between the SCC, hostel residents, and the accompanying staff members, reinforcing the sense of community within the college. The Merdeka Hiking 2023 event was more than just a physical activity; it symbolised the power of unity and collaboration. With the success of Merdeka Hiking 2023 echoing through the trails of Beruang Hill, it is clear that the spirit of togetherness can triumph over any challenges, reminding us all of the importance of standing united, no matter where we come from.

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## An Insightful Mental Health Talk on Stress Management

On 6 September 2023, Ms. Geeta Krishnasamy, with assistance from Mr. Terence Tan Gek Siang, delivered a mental health talk titled "Definitive Tools for Handling Stress." Approximately 65 undergraduate students from the Faculty of Business (FOB) attended the event.

The discussion began by exploring neuroscience, where various brainwave patterns were explained. Students were taught practical techniques to calm their minds and achieve desired outcomes. Ms. Krishnasamy discussed hypnotherapy as a method for relaxation and focused concentration, leading to the alpha brainwave state.

This state is beneficial for enhancing well-being and fostering positive change through positive affirmations. Additionally, the students were introduced to Emotion Replacement Therapy (ERT), an advanced form of neurotherapy that operates similarly to reprogramming a computer. In an interactive session, students voted to eliminate stress and cultivate focused confidence using ERT. As a result, they gained a fresh perspective on how their minds play a crucial role in achieving academic and life goals.





## MMU Clinches 13 Medals at MTE-AHLS 2023

Multimedia University (MMU) clinched 13 medals at the MTE 2023: Advanced Healthcare and Life Sciences International Innovation Awards & Expo (AHLS IIAE), which was held from 9-11 August 2023.

Our researchers grabbed 1 Outstanding Award, 2 Special Awards, 8 Gold Awards, and 2 Silver Awards during the event.

The following is a list of medal winners from MMU:

Awards	Project Title	Project Leader	Project Members	Faculty
Outstanding	POTARINGA: A Sustainable, Ready-To-Use & Nutritious Therapeutic Food	Mr. Vincent Chan	Jogtika A/P Ramasamy, Tarshinii A/P K Anandanrajah, Syamim Binti Mohgi	FOB
Special	A Versatile Stepladder for Older People and Caregivers	Assoc. Prof. Dr. Ng Poh Kiat	Gan Kah Wei, Liew Kia Wai	FET
Special	MindAlert: AI-powered Seizure Diagnosis System	Ts. Assoc. Prof. Dr. Pang Ying Han	Dr. Lim Zheng You, Assoc. Prof. Dr. Ooi Shih Yin, Ts. Dr. Khoh Wee How, Mr. Chew Yee Jian	FIST
Gold	A Versatile Stepladder for Older People and Caregivers	Assoc. Prof. Dr. Ng Poh Kiat	Gan Kah Wei, Liew Kia Wai	FET
Gold	MindAlert: AI-powered Seizure Diagnosis System	Ts. Assoc. Prof. Dr. Pang Ying Han	Dr. Lim Zheng You, Assoc. Prof. Dr. Ooi Shih Yin, Ts. Dr. Khoh Wee How, Mr. Chew Yee Jian	FIST
Gold	Headspan: A Mobile Apps for Employee Well Being in Audit Firms	Assoc. Prof. Ts. Dr Magiswary Dorasamy	Liyana Aqilah Binti Abd Hamid, Ilham Khalisah Binti Khairuddin	FOM
Gold	TutorKAY@Home	Ms. Anushia A/P Chelvarayan	Dr. Yeo Sook Fern, Dr. Lim Kah Boon	FOB

Awards	Project Title	Project Leader	Project Members	Faculty
Gold	Landslide Area Prediction using Machine Learning and Unmanned Aerial Vehicle (UAV) Imaging	Assoc. Prof. Ts. Dr. Ooi Shih Yin	Gs. Dr. Sheriza Mohd Razali, Assoc. Prof. Ts. Dr. Pang Ying Han, Gs. Assoc. Prof. Dr. Norizah Kamaruddin, Dr. Siti Nurhuidayu Abu Bakar, Prof. Dr. Hazandy Abdul Hamid, Chew Yee Jian, Dr. Lim Zheng You, Dr. Cham Chin Leei, Ts. Dr. Chong Siew Chin	FIST
Gold	Cloud-Based Sleep Quality Monitoring System Using Pressure Sensor Grid	Dr. Yeo Boon Chin	Prof. Dr. Lim Way Soong, Kong Keh Chueng, Tan Qi Yi, Viknesh Kumar	FET
Gold	POTARINGA: A Sustainable, Ready-To-Use & Nutritious Therapeutic Food	Mr. Vincent Chan	Jogtika A/P Ramasamy, Tarshinii A/P K Anandanrajah, Syamim Binti Mohgi	FOB
Gold	Predictive Modeling of Heat Stress Patterns and Hotspot Identification using Machine Learning and Environmental Data	Ts. Dr. Sumendra A/L Yogarayan	Lim Ke Yin, Ts. Dr. Siti Fatimah Abdul Razak	FIST
Silver	Intelligent Bean de-skinning machine: Gout Preventive Solution	Dr. Cham Chin Leei	Assoc. Prof. Dr. Ooi Shih Yin, Prof. Tan Ai Hui, Prof. Zulfadzli Yusoff, Assoc. Prof. Dr. Ooi Chee Pun, Dr. Tan Wooi Haw, Prof. Hairul Azhar, Assoc. Prof. Dr. Tan Yi Fei, Dr. Gan Ming Tao, Prof. Hezerul Abdul Karim, Kwan Wei Peng	FOE
Silver	SHARIN – One-Stop Immersive Gamified Virtual Healthcare Centre	Mr. Vincent Chan	Kalsum Preeti Binti Abdul Rahim Suren, Reyshinder A/L Ramish, Nabil Faris Ubaidi Bin Hamimudin, Muhamad Amirul Iqwan Bin Norhazmi	FOB



## MUBS' #Kitasama Blood Donation Drive Success



The Multimedia University Business Society (MUBS) successfully hosted the #Kitasama Blood Donation Drive on the 12th and 13th of September 2023 at the Central Learning Complex (CLC) on the Melaka campus. Over 250 people generously donated their blood during this two-day event. The theme was “Give Blood, Give Plasma, Share Life, Share Often.”

MUBS collaborated with several organisations, including the Hospital Melaka Blood Transfusion Department, Junior Chamber International Malacca City Entrepreneur (JCI MCE), Seri Tanjung Dental Clinic, Cheng Dental Clinic, HIV/STI & HEP Unit at Hospital Melaka, the National Kidney Foundation of Malaysia (NKF), One Medic Ujong Pasir Branch, and FGV Holdings. The Faculty of Business and the MMU Occupational, Safety, Health, and Environment Department (OSHE) also provided their support.

Themed ‘Give Blood, Give Plasma, Share Life, Share Often,’ the event also featured a Sustainable Development Goals (SDGs) Exhibition organised by Junior Chamber International, Melaka. Through these activities, attendees gained valuable insights into the impact of the SDGs on our society and community development. The exhibition raised awareness and encouraged action towards achieving the 17 UN Sustainable Development Goals.

Students had the chance to learn about crucial SDG topics such as poverty, hunger, and education, which enhanced their understanding of the challenges faced by communities worldwide. This newfound awareness nurtured a sense of global connection and empathy for the well-being of the entire planet.

In line with their commitment to community well-being, they invited Jabatan Pergigian Melaka Tengah to provide mobile oral health screenings for the entire MMU Melaka community. Attendees also had access to complementary health screenings courtesy of the OneMedic Ujong Pasir Branch.

The event featured various health education booths, including HIV Awareness, Kidney Health by the National Kidney Foundation of Malaysia, Renewable Energy Education Booths by FGV Holdings, and Blood Donation Awareness by Melaka BloodBanks. These initiatives collectively aim to promote holistic health awareness and support the broader welfare of our community.

The event’s opening ceremony was attended by Dr. Afandi Bin Yusof (Deputy Dean, Student Experience And Alumni), Dr. Yeo Sook Fern (Deputy Dean, Research & Industrial Collaborations), Ms. Anushia Chelvarayan (Club Advisor), Mr. Jeffrey Quek Shue Yew (MMU Alumni, Club President of Business Society), and various officers from external parties.



## MMU Student-Athletes Win Big at SIPMA 2023

Low Zheng Yong from the Faculty of Information Science and Technology (FIST) and Christy Teh Xing Ti from the Faculty of Law (FOL) clinched medals in the swimming category during the competition at the Sukan Institusi Pendidikan Malaysia (SIPMA) 2023

Zheng Yong secured 2 gold and 1 silver medal for the 4x200m free relay, the 4x100 free relay, and the 100m fly. Christy also won 2 gold and 1 bronze medal in the 4x200m free relay, the 4x100m free relay, and the 200m back. In addition, Nurul Aisyah from FOL and Muhammad Aimeer Shah from the Faculty of Computing and Informatics (FCI) secured a silver medal in the Men’s and Women’s bowling teams. SIPMA 2023 was graced by YB Fadhlina Sidek, Minister of Education Malaysia, in Tanjung Malim. The competition was held from 10 until 17 September 2023, with the participation of more than 500 varsity students in Malaysia.



## MMU Signs MoA with FELET International Holdings Sdn. Bhd.

A Memorandum of Agreement (MoA) was signed between Multimedia University (MMU) and FELET International Holdings Sdn. Bhd., one of the largest badminton suppliers in the world, on 13 September 2023 at the Melaka campus. Signing the agreement were Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU,



and Datuk Teo Tong Wah, Managing Director of FELET International Holdings Sdn. Bhd. Through this cooperation, MMU will receive the official sponsorship package for the badminton equipment and apparel for our student-athletes during their upcoming competition. FELET will also render his support to the MMU Badminton Club for their activities or tournaments, and a lot more engagement will be crafted for the mutual benefit of both parties.

It is hoped that this new partnership will help our athletes create more success stories and greater milestones in the near future. Among other attendees were Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development, and other MMU staff.



### MMU Contingent to Compete in HESF 2023

Multimedia University (MMU) campus. Our students contingent made its appearance at the Higher Education Sports Fest (HESF) from 24 October until 29 October 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU met with student-athletes during a special Supper Talk on 23 October 2023 at the Cyberjaya

campus. Our students competed in archery, rugby 7s, and table tennis.

In his speech, Prof. Dato' Dr. Mazliham commended the efforts and achievements garnered by MMU student-athletes. Prof. Dato' Mazliham also extended his appreciation to Felet International Sdn. Bhd. for sponsoring the MMU

contingent attire including the official t-shirt, training t-shirt, and shoe bag.

More than 30 institutes of higher education with more than 2,000 student-athletes competing in six sports events at Universiti Sultan Zainal Abidin (UniSZA), Terengganu. We at MMU would like to wish all the best to all of our athletes for this competition.

### MESRA Club Enlightens Staff with Self-Massage Stress Relief

The MESRA club recently organised a sharing session called "Soothe Your Soul: Stress Relief through Self-Massage." This event was held in the Faculty of Business (FOB) Conference Room, located within MMU Melaka, and attended by 12 staff members from various departments on 26 October 2023. Ms. Zarifah Amir, a well-respected lecturer from the FOB, led the session. She shared her wealth of knowledge about body composition, finding pressure

points, easy ways to locate areas of discomfort and practical self-massage techniques. Participants found the session captivating and appreciated the useful information it provided. They were especially impressed by the simple techniques to ease stress and boost blood circulation. The goal of this session was to provide MMU staff with the tools to understand and effectively manage stress, ultimately enhancing their well-being and productivity.



## SRC Hosted Sports Mania 2023

More than 1,000 students from Cyberjaya and Melaka campuses competed in 10 games for Sports Mania 2023. The event was held from 26 until 28 August at the Melaka campus and from 2 November until 8 September at the Cyberjaya campus. Organised by Students' Representative Council (SRC) and supported by Student Lifestyle and Experience (STyLE) the opening and closing ceremonies were graced by MMU President, Prof. Dato' Dr. Mazliham Mohd Su'ud.



In his speech, Prof. Dato' commended the athletes' determination, commitment, and hard work in showcasing their athletic talents throughout the event. Participating in sports events helps university students to boost their self-esteem, foster teamwork spirits, and many others. Hence, university students are encouraged to actively participate in both academic and extracurricular activities to be well-rounded graduates.



MMU defended its championship at the "Kejohanan Sukan MASISWA Zon Selatan 2023", recently. MMU athletes secured 29 medals: 17 gold medals, 9 silver medals and 3 bronze medals during the competition from 29 December until 31 December 2023. Hundreds of participants from 15 universities took part in seven sports categories during the event.

## MMU Emerges Overall Champion at Kejohanan Sukan MASISWA Zon Selatan 2023



YB Adam Adli Abdul Halim, Deputy Minister of Youth and Sports was invited to grace the opening ceremony of the

championship at the Melaka campus on 29 December 2023. The event was also attended by Prof. Dr. Wong Eng Kiong, Melaka Campus Director as well as Student Lifestyle & Experience (STyLE) officers. In the final standings, MMU clinched the first place, while Kolej Universiti Islam Johor Sultan Ibrahim (Kuijsi) won the second place, and the third place was secured by Universiti Melaka. For the record, our university was also announced as the champion during last year's competition with 18 medals.



## FOE Industry Forum 2023 Imparts Knowledge on AI Advancements for Healthcare

On 8 December 2023, more than 120 participants attended the Faculty of Engineering (FOE) Industry Forum 2023, entitled “Advancements in Artificial Intelligence for Healthcare: Recent Developments and Opportunities for Malaysia,” at the Multipurpose Hall (MPH), Cyberjaya campus.

The forum was jointly organised by the Industrial Linkage Committee of FOE, the IEEE Signal Processing Society Malaysia Chapter, and the Institution of Engineers, Malaysia (IEM). The forum aimed to showcase global trends in AI’s impact on healthcare, providing an overview of challenges and opportunities unique to Malaysia. The forum was open to the public and was recognised as a Continuous Professional Development (CPD) activity by the Institution of Engineers, Malaysia (IEM) for individuals seeking to gather CPD hours for the annual renewal of their professional engineering membership.



The panelists included Ir. Prof. Dr. Mohammad Faizal Ahmad Fauzi (FOE Professor) and Mr. Jeffrey Mohammad Noor (Senior Principal Assistant Director, Ministry of Health). The event was successfully moderated by Dr. Aziah Ali, (lecturer from the Faculty of Computing and Informatics). During the forum, Professor Faizal highlighted recent AI healthcare developments in Malaysia, emphasising their potential and uniqueness. He discussed AI’s role in addressing challenges across diverse regions and provided guidelines for ethical deployment. The conversation extended to leveraging AI in healthcare’s digital transformation, showcasing use cases for improved outcomes.

Collaborative opportunities between researchers and industry stakeholders were outlined. Mr. Jeffrey Noor outlined AI’s role in Malaysia’s healthcare strategy, showcasing initiatives and addressing challenges.

Examples illustrated AI’s impact on resource allocation, patient care, and administrative efficiency. The Ministry’s approach to ensuring equitable healthcare access using AI was explained. Lastly, collaborative efforts with the government, healthcare institutions, and the private sector were discussed.

In conclusion, the FOE Industry Forum 2023 successfully fostered collaboration, offering insights into AI’s role in healthcare for Malaysia. The speakers’ valuable contributions and audience participation highlighted the forum’s success in promoting knowledge exchange and networking within the industry and academic community.







## QUALITY EDUCATION

**“Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.”**

*The university has remained steadfast in its commitment to extending its expertise to a wide audience, aiming to foster community development, facilitate knowledge-sharing, and promote lifelong learning opportunities. This dedication has been manifested through various initiatives, such as providing financial aid to alleviate economic barriers, offering flexible short courses to broaden access to education, and organising workshops tailored to accommodate individuals with basic educational backgrounds.*

*Additionally, MMU remains dedicated to supporting exceptional students from underprivileged backgrounds through ongoing scholarship programs. Through its University Social Responsibility activities, the university further enhances the well-being of its citizens and communities, ensuring a lasting positive impact.*



**845**

Students with Full Scholarship



**12,464**

Students with Financial Assistance

Internal Scholarship Offered

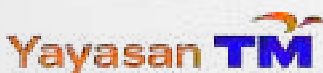


**9**

External Scholarship Offered



**57**



and many more...



## MMU, Petronas Exchange MoU for CHES Programme



project management, engineering solutions, technology and digital delivery by Petronas.

MMU and Petronas inked the pact in 2022, and as one of members of the programme, there were more than 10 Petronas CHES Talks conducted at the Faculty of Engineering and Technology (FET) last year. It is hoped that more collaborative engagements could be achieved between both parties in an effort to expand students' horizons, especially in the oil and gas industry.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU exchanged the Memorandum of Understanding (MoU) with Datuk Bacho Piong, Petronas Senior Vice President of Project Delivery and Technology during the first CHES Symposium 2023 in Kuala Lumpur Convention Centre (KLCC) on 3 June 2023. The event was also graced by the presence of Prof. Dr Azlinda Azman, Director-General of Higher Education, who also delivered a keynote address to the participants.

CHES or known as Collaboration with Higher Education Strategic Initiatives is a programme that aims to foster a closer relationship between the institute of higher learning and Petronas's education agenda and Sustainability Development Goals (SDG) under Quality Education. Through this programme, university staff and students would be exposed to the knowledge and best practices in





## MMU President Officiates “STEM FOR ALL” Programme

Prof. Dato’ Dr. Mazliham Mohd Su’ud, MMU President was invited to officiate “STEM FOR ALL” programme at Sekolah Menengah Kebangsaan Bandar Puncak Jalil on 25 January 2023. The programme aimed to elevate students’ interest and knowledge in the field of Science, Technology, Engineering and Mathematics (STEM).

The students also showcased their projects to the MMU representatives and other guests during the event. Also attending the launching ceremony were Mr. Zambri Pawanchik, Vice President of Strategic Marketing, Admission and Recruitment (VP SMART); Prof. Dr. Mohamad Yusoff Alias, Ir. Dr. Siva Priya a/p Thiagarajah from the Faculty of Engineering (FOE) and Ts. Natalya Rudina Shamsuar, Director of Strategic Marketing Department.



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## FET Launches Book Donation for USR Initiative

The Faculty of Engineering and Technology (FET) launched a book donation initiative for Integrated Islamic School Melaka students as part of its university social responsibility programme, recently. The programme was also supported by the Melaka State Government sponsoring RM1,000 for the effort. More than 40 books were distributed for the school students to use for their knowledge acquisition.

The USR initiative was made possible through the FET’s contribution to enhance knowledge as well as to increase engagement with the community. The event was attended by FET lecturers and representatives from the school. It is hoped that more similar initiatives could be widened to other areas to cultivate a love of reading amongst younger generations.





## MMU Receives Gold Award at Putra Brand Awards 2022

MMU clinched the Gold Award under the Education & Learning category at the Putra Brand Awards 2022 on 13 January 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU received the accolade during the Gala Presentation Ceremony held at One World Hotel in Kuala Lumpur. MMU first received the Silver Award in 2019 and the Bronze medal in 2021 for the same category.

Putra Brand Awards or also known as the People's Choice Awards recognises the brand



building as an integral business investment and is measured by consumer preference. This is the 13th year of the Putra Brand Award, where a total of 151 awards were presented in various categories, namely media, communications, banking, e-commerce

entertainment, and others. MMU is grateful for the continued support given by the people as well as MMU community for the university to continue delivering the best quality education to the digital future leaders.

## MMU, Agmo Holdings Berhad Sign MoA to Establish Agmo Space



On 31 January 2023, a Memorandum of Agreement (MoA) was signed between Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Mr. Tan Aik Keong, Chief Executive Officer of Agmo Holdings Berhad at the Cyberjaya campus. The event signified the collaborative efforts in establishing the first innovative space, Agmo-Space by our Permata Dunia on the MMU campus. The facility will be equipped with cutting-edge technology such as NFT, VR, AR, XR, and others to assist students' learning experiences and boost the quality of education.

This new initiative also fosters the relationship and partnership between academia and industry.

The signing ceremony was also attended by Prof. Ir. Dr. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoint (VP MEET); Ts. Dr. Lim Kok Yoong, Dean of the Faculty of Creative Multimedia; Assoc. Prof. Ts. Dr. Junaidi Abdullah, Dean of the Faculty of Computing and Informatics, and other MMU officials.

## Contributing Smart TVs for Digital Community Library Project

In an effort to support the use of new technology in teaching and learning activities, Multimedia University (MMU) handed over smart televisions to Sekolah Menengah Sains Muzaffar Syah (MOZAC) and Sekolah Menengah Kebangsaan (SMK) Dang Anum in Melaka. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU presented the Smart TVs to the school principals; Puan Che Romas Noor and Tuan Haji Azhari Jaafar respectively in separate presentation sessions on 1 February 2023.



This community service project is a continuation of the Memorandum of Understanding (MoU) that was signed between MMU and the schools on 29 March 2021, where MMU received the waqf contribution under the digital community library project. Through this

initiative, the teachers and school students would be able to enjoy interesting and enjoyable learning and facilitation activities with the upgraded facility. This effort was supported by Perbadanan Wakaf Selangor (PWS), Yayasan Universiti Multimedia (YUM), and Siti Hasmah Digital Library (SHDL).

## MMU Explores Partnership with Yayasan KRU on Talent Development



Multimedia University (MMU) signed a Memorandum of Understanding (MoU) with Yayasan KRU on 30 Jan 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU.

signed the agreement together with Dato' Norman Abd Halim, President of Yayasan KRU at the Cyberjaya campus. This pact marks another engagement with the industry

partner to maximise our students' learning with industrial exposure and experience. This new partnership was initiated by the Faculty of Business (FOB) where the faculty continues to engage and build relationships with the industry players.

The guests also had the opportunity to visit faculties and campus facilities on campus. Also attending the signing ceremony were Mr. Noor Hafeez Bin Noor Hashim, General Manager, Yayasan KRU; Mr. Zambri Pawanchik, Vice President of Strategic Marketing, Admission and Recruitment (VP SMART); Dr. Lye Chun Teck, Dean of FOB and other MMU officers.



On 10 February 2023, Multimedia University (MMU) received a courtesy visit from representatives from the District Education Office of Keramat (PPD Keramat) to the Cyberjaya campus. Puan Aziah Amir, District Education Officer led her delegation members and the guests were warmly welcomed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU.

Both parties will establish their strategic partnership by organising the 'Bring Your Own Device to School' programme. The programme will assist the school students to explore the teaching and facilitation activities.

## MMU and Pejabat Pendidikan Daerah Keramat Explore Collaborative Venture



## Experiencing On Campus Facilities and Lifestyle

On 11 February 2023, MMU received 118 Form 2 students from Sekolah Menengah Sains Tuanku Munawir (SASER). The trip was under the initiative of the Form 2 Sarana group led by Encik Mohd. Mazlan Mokhtar. During the visit, the school was represented by Ustazah Nuratikah Ahmad. The main sponsor of the event was Yayasan Universiti Multimedia (YUM).

The visit was to expose students to the technological field covered by MMU like animation, augmented reality, virtual reality, 3D printing, IoT

smart farm, and film production. In the afternoon students, parents, and teachers were taken to the Cinema to watch a short movie produced by the FCA students.

After the movie, students attempted a quiz where 5 winners who answered all 10 questions correctly in the fastest time were selected to receive a special token from MMU

The group was later joined by the President, Prof. Dato' Dr. Mazliham Mohd Su'ud during the afternoon tea break before the students departed back to Seremban

## YUM Enables School to Utilise Smart Technology for Interactive and Engaging Learning

Yayasan Universiti Multimedia (YUM) provided a Smart TV to Sekolah Menengah Sains Muar (SAMURA) through its digital community library project. This enables SAMURA to access Multimedia University (MMU) Siti Hasmah Digital Library's digital content for its students. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU handed over the smart TV to Tuan Haji Razali Sudin, school principal of SAMURA during the presentation ceremony held at the school.

In his speech, Prof. Dato' highlighted that this initiative was supported by the waqf contribution and it is hoped that the students would be able to enjoy interactive

and engaging learning with the smart technology. This initiative was completed previously in two schools in Melaka namely Sekolah Menengah Sains Muzaffar Syah (MOZAC) and Sekolah Menengah Kebangsaan (SMK) Dang Anum on 1 February 2023.



On 2 March 2023, Multimedia University (MMU) and Sektor Sumber Teknologi Pendidikan (SSTP) Jabatan Pendidikan Negeri (JPN) Melaka formalised their relationship as a strategic partner during a courtesy visit to the Cyberjaya campus. The SSTP JPN Melaka delegation was led by Mr. Nasaruddin Hj. Rahmat, its Chief Assistant Director received a warm welcome from

## MMU & SSTP JPN Melaka Formalise Relationship as Strategic Partner

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU. During the event, Prof. Dato' Mazliham received the appointment letter as the strategic partner from Mr. Nasaruddin.

The cooperation between both parties will enable school students to experience digital technology in their education. The guests were also invited to tour the campus and learning facilities during the event.





## Sparking Interest in Robotics Showcase & Mini Games



The Faculty of Engineering and Technology (FET) through its Robotics Club hosted a Robot Showcase and Mini Games during the MMU Info Day on 25 February 2023. The event aimed to promote the visitor's interest in robotics and emerging technologies.

The visitors also had the opportunity to play and compete using the VEX robots during the mini-game session. The committee members also demonstrated robots developed by the Robotics Club's technical team. The featured robots included line-following robots, sumo robots, and drones. The visitors gained a better understanding of robotics and had a lot of fun playing the robot games.

A total of 27 MMU students partook in a three-day programme, 'Zoom Pahang Programme 2022' at Kampung Pamah Rawas, Raub. The programme was officiated by Yang Berhormat Encik Fadzli Mohamad Kamal, Pahang State Exco (Communication and Multimedia, Youth, Sports and Non-governmental Organisations). Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU also attended the opening ceremony that was held on 17 March 2023.

The programme was supposed to be conducted last year, however, it was postponed due to unforeseen circumstances.

## Zoom Pahang Programme Fosters Community Engagement among Students



Organised by Kelab Sekretariat Rakan Muda, the programme helped to foster community engagement with their adopted families. The students made activities with the community and these experiences would help them to enhance their personal development and skills. "Zoom Pahang Programme" also received support and contributions including Pejabat Menteri Besar Pahang, Yayasan Universiti Multimedia (YUM), Yayasan Telekom Malaysia (YTM), Aries Berry Enterprise and others.



## MMU Adopts 25 Schools Nationwide for Its “Program Sekolah Angkat MMU 2023”



On 29 March 2023, Multimedia University (MMU) launched its “Program Sekolah Angkat MMU 2023” with representatives from 25 schools nationwide virtually. Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU graced the occasion and many activities as well as initiatives that beneficial to the students, schools and university.

In his speech, Prof. Dato’ Dr. Mazliham explained that MMU is ready to share knowledge and its expertise in digital and multimedia technology to cultivate digital talent for the nation. “Program Sekolah Angkat MMU” also has strengthened

school-university partnerships, where MMU is committed to extend a helping hand in three main fields namely Digital Education Transformation, STEM Innovation and Career Exposure related to the Industrial Revolution.

Among MMU’s adopted schools are SMK Cyberjaya, SK Cyberjaya, SMK Putra Perdana, SMK Bandar Puncak Jalil, SMK Seri Kembangan, Sekolah Seri Puteri, Sekolah Sultan Alam Shah, SMK Putrajaya Presint 8 (1), SMK Seri Saujana, SMK Bukit Jalil, SMK Seri Permaisuri, SMKA Slim River, SMK Seri Perak, SMK Seberang Jaya, SMK Changlun, SMK Seri Mahawangsa, SM Tunku Besar Burhanudin, SMK Dang Anum, SM Sain Muzaffar Syah, SM Sains Muar, Sekolah Tun Fatimah, SMK Dato’ Bentara Luar, SMK Tengku Afzan, SMK Sultan Sulaiman and SMK Raja Sakti.

## Empowering Retail Marketing through Microsoft Power BI

Dr. Tan Khong Sin, a senior lecturer from the Faculty of Business (FOB) organised a workshop in collaboration with RCH Retail Marketing Sdn. Bhd. as part of the University Social Responsibility (USR) programme on 1 June 2023 in Shah Alam. Approximately 45 participants attended the workshop to enhance their understanding of Power BI and its visual capabilities. Throughout the workshop, Dr. Tan engaged the participants in a series



of interactive activities and exercises. These activities were specifically designed to demonstrate the significance of Power BI within the organization. Through hands-on experiences, the employees were able to grasp the practical applications and benefits of Power BI in a retail marketing context. By visualising data and generating insightful reports, Power BI empowers organizations to make data-driven decisions and drive business growth. Dr. Tan’s workshop successfully facilitated a deep understanding of the connection between Microsoft Power BI Desktop and the organisation’s marketing strategies.



## MMU President Speaks on XR at the Times Higher Education Digital Universities Asia Conference



Prof. Dato' Dr. Mazliham Mohd Su'ud, MMU President was featured at the Times Higher Education Digital Universities Asia Conference at Hilton Kuala Lumpur on 10 May 2023, speaking in a panel entitled "Extended reality in higher education: Where is it going next?". Prof. Dato' Dr. Mazliham was optimistic that extended reality (XR) presents endless possibilities for universities to engage students in a more versatile, creative, individualised and more importantly, effective manner that will undeniably re-shape the future of university education. He also shared some of MMU's forays with XR in the form of nanotechnology laboratory experiments that were developed by our innovative Faculty of Creative Multimedia (FCM) academics during the

COVID-19 lockdown to allow our students to conduct their experiments remotely whilst experiencing the MMU nanotechnology laboratory via XR technology.

The President opined that the main challenge that all universities face in embarking on XR in teaching and learning is to train and re-train all academics to be familiar with the pedagogical aspects of embedding XR in the classroom. The success of realising the full potential of XR is dependent on the ability of universities to ensure that academics are competent with XR from a pedagogical perspective. He envisaged that the future of XR is bright as it opens new frontiers for universities and academics in bringing higher education to more people in a more engaging manner.

Also featured in this conference is the Director of Centre for Learning Excellence and Academic Intelligence (LEARN), Prof. Dr. Wong Chee Onn who spoke in the panel "How to design online learning with students" together with 2 MMU students – Mr. Lum Jinn Min from the Faculty of Computing and Informatics (FCI) and Ms. Tan Huey Shyh from the Faculty of Cinematic Arts (FCM). In this panel, they spoke on how students would like to learn and in turn, contribute to the curriculum design process and how universities could engage their students better in the curriculum design process be it at the programme or course level.

They also shared their MMU experiences in developing the 'Build Your Own Curriculum' or BYOC model that allows students to curate their programmes and how student feedback provided invaluable input for the HyFlex and Hy Space teaching and learning spaces on campus that enabled more engaging technology-enabled learning experiences for students during the COVID and post-COVID phases.



## MUET Webinar 2023 Equips Students with Strategies and Skills

The English Unit of Learning Institute for Empowerment (LiFE) and the Student Representative Council (SRC) joined forces to host a highly successful MUET Webinar 2023. This noteworthy event took place on May 20 and 27, 2023 and attracted participants from renowned educational institutions, notably including MMU students.

The webinar featured an impressive line-up of four

distinguished guest speakers and seasoned MUET experts: Mr. Choo Wan Yat, Dr. Ng Yu Jin, Mdm Maziyah Hj Mazlan, and Mr. Divakaran APK. These experts generously shared invaluable tips, techniques, and strategies to help participants excel in MUET.

The MUET webinar proved immensely beneficial to its attendees by equipping them with essential skills, knowledge, and strategies

necessary to overcome the challenges of the upcoming MUET examination. The primary focus of the webinar revolved around the MUET format and test specifications, with the explicit aim of instilling students with a sense of assurance and thorough preparedness.

In conclusion, the MUET Webinar 2023 achieved notable success. The presence of distinguished speakers, combined with the unwavering dedication of the organising committee and the continuous support from management and faculty members, created a valuable learning experience for all participants.



## Developing Collaborative Partnership with Secondary School

On 18 July 2023, a delegation of six academic members from the Faculty of Business (FOB) made a visit to Sekolah Tun Fatimah (STF) in Johor. Dr. Siti Zakiah Melatu Samsi, FOB dean led the delegation and they were warmly received by Ustazah Nur Haniza Abdullah, one of the Senior School Assistants at STF, along with several counselors and teachers.

The visit aimed to explore potential collaborations between the two institutions and foster mutual growth. The representatives from FOB & STF discussed various areas of cooperation, aiming to forge beneficial partnerships. The focus was on MMU's Program Sekolah Angkat 2023, which demonstrates the university's commitment to supporting neighboring communities and extending a helping hand to ensure collective development. As part of the visit, the FOB delegates were given the opportunity to tour the digital library and digital hub at STF, witnessing the school's progressive approach to educational technology and resources.



The focus was on MMU's Program Sekolah Angkat 2023, which demonstrates the university's commitment to supporting neighboring communities and extending a helping hand to ensure collective development. As part of the visit, the FOB delegates were given the opportunity to tour the digital library and digital hub at STF, witnessing the school's progressive approach to educational technology and resources.



## MRSM Students Gain Experience on Campus Lifestyle

A total of 48 students and 3 accompanying teachers from MRSM Tun Ghafar Baba from Melaka participated in a day visit to the Cyberjaya campus on 13 July 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU welcomed the guests and delivered a few words to them in the session.

Organised by Student Recruitment and Admission Department (SRAD), the day trip provided an opportunity for the students to visualise and experience the campus lifestyle



by visiting faculties including Faculty of Creative Multimedia (FCM), Faculty of Cinematic Arts (FCA), Faculty of Engineering (FOM), and Faculty of Applied Communication (FAC). The students also made a visit to the SHDL library and

engaged in several activities including workshops, talk show as well as watching short films. It is hoped that the students gained positive perspectives on university life and they can get an idea of what to expect when they embark on their tertiary education.

## Sekolah@MMU Perdana Darul Takzim Fosters Digital Literacy Skills among Younger Generation



A total of 73 MMU students from Cyberjaya and Melaka campuses travelled to five schools in Muar, Batu Pahat, and Kluang districts to hold the Sekolah@MMU Perdana Darul Takzim programme. It was a service-learning program that involves the transfer of knowledge and skills in technology, innovation, and entrepreneurship from MMU students to selected Form 4 and Form 5 students from

Sekolah Menengah Kebangsaan (SMK) Sultan Alauddin Riayat Shah I, SMK Dato' Bentara Luar, SMK Dato' Syed Esa, SM Sains Muar, and SM Sains Sembrong. Participated by 600 students from 20 July until 22 July 2023, the closing ceremony was graced by YB Cik Norlizah Noh, the Johor Education, Information, and Communications Committee chairman at Dewan Khalifah, SM Sains Sembrong, Kluang. The event was also attended by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, who also delivered his speech at the event.

Sekolah@MMU Perdana Darul Takzim proved a great success, and everyone enjoyed it. All of this was made possible by the collaborators and sponsors. Thank you to Yayasan Universiti Multimedia (YUM) and Yayasan Makmur Batu Pahat for collaborating and making this event possible.



## FOM Empowers Students with Hands-On AutoCount Accounting Workshop

The Faculty of Management (FOM) successfully organised an empowering workshop titled “Empowering beginners AutoCount Accounting”. The event, ably led by Ms. Norzarina Md Yatim, FOM School Engagement Coordinator, was held on 27 July 2023 at FOM Lab, Cyberjaya campus.

The objective of the workshop was to provide valuable insights and practical knowledge on AutoCount Accounting to 25 students from Sekolah Seri Puteri, Cyberjaya. Dr. Abby Ashraff Saprudin, a renowned expert in the field, served as an esteemed speaker and guided the participants through the intricacies of the software and its application in the business world.

The event proved to be an enriching experience

for the attendees as they participated in interactive sessions and hands-on activities that fostered a deeper understanding of accounting principles and their implementation with AutoCount.

A dedicated team of individuals made this event possible and ensured its smooth execution. Ms. Noor Shahaliza Othman, Ms. Nor Hazleza Mohamad, Mr. Zulkefly Yusup, and Ms. Haslin Johari showed their dedication and expertise in coordinating the various aspects of the workshop. The Faculty of Management (FOM) is proud to have given these budding accounting enthusiasts the opportunity to improve their skills and explore the world of accounting software under the guidance of experienced professionals.

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## MESRA Conducts Basic Archery Class for Kids



Multimedia University Employee Sport & Recreational Alliance (MESRA) conducted an introductory archery session for kids aged 7 to 13 during the school break week on 30 August 2023. A total of 20 kids participated in this programme, where they had a blast while learning in a super-safe and fun environment.

This activity encourages patience, self-control, focus, and social skills, as archery is not only a shooting sport but also an art. It also helped the kids follow an active lifestyle.



## Empowering Youth Through Entrepreneurship: YOUTH4YOUTH 2.0's Impactful Journey as 'Rakan Pelaksana'

The Sekretariat Rakan Muda (SRM) MMU Cyberjaya achieved a remarkable milestone with the conclusion of YOUTH4YOUTH 2.0, an initiative that has been designated as 'Rakan Pelaksana' by the Ministry of Youth and Sports under the Rakan Muda framework. This innovative project carried out in collaboration with Pertubuhan Kebajikan Anak-anak Yatim & Miskin (PEYAKIN) Negeri Sembilan, has taken significant strides in nurturing an entrepreneurial spirit and vital life skills among its beneficiaries. The exquisite creations of PEYAKIN children.

The journey embarked upon on 10 June 2023 culminated in a spectacular closing ceremony on 19 August 2023. The MMU Cinema witnessed a memorable event, graced by the presence of Mr. Syamsul Tahrin bin Mohd Tahir, Deputy Director General of the Youth Development Division, National Youth and Sports Department.

However, this wasn't the conclusion but rather a transition into the grand culmination of YOUTH4YOUTH 2.0 – a product sale extravaganza at Lorong Belakang Cyberjaya @ Shaftsbury Square Cyberjaya, featuring



The highlight of this event was the offering of products carefully crafted during the seventh week's module titled "Penghasilan Produk Makanan" (Food Product Manufacturing). The outcome of the children's labour manifested as nearly 30 sets of delectable honey cornflakes, instantly captivating the

attendees. Beyond this, the event stall displayed an array of culinary delights, including 60 packs of Rice Sets showcasing Nasi Ayam Berempah and Nasi Ayam Buttermilk.

Amidst this vibrant setting, a breakthrough moment unfolded with the first sale, fortifying the children's confidence.



### SMK Seri Kembangan Makes A Visit to FCM

A group of 40 students from FCM's *sekolah angkat*, Sekolah Menengah Kebangsaan (SMK) Seri Kembangan, along with two accompanying teachers, Mdm. Norlaili and Mdm. Norziela, paid a visit to the Faculty of Creative Multimedia (FCM) on 23 August 2023. The visit commenced with a warm reception from the dean of the FCM, Ts. Dr. Lim Kok Yoong, who coincidentally is an alumnus of SMK Seri Kembangan.

Then, the group was guided on a tour of the UNLOCK2023 exhibition at the e-Gallery, followed by a visit to the wall of fame showcasing the achievements of the Diploma in Creative Multimedia programme. The students also participated in a workshop conducted by our esteemed academicians, Mr. Mohd Ikhwan Mohd Marzuki and Ms. Farzura Azreen Abdul Saip, entitled "Basic 3D Workshop." During the course, participants were introduced to the techniques of 3D modelling through the use of an application called MagicaVoxel. The top three winners were chosen based on their exceptional artistic merit. These artworks were deemed to be the best among the submissions.

The winners of the competition were Rizq Hariz and Hew Zihoy Rizky, who secured the first-place position. The second position in the competition was secured by Wai Xing Thong and Loo Jun Thong, and the third place was secured by Muhammad Farish Chai and Mudhalvan Kaneshwaran.

Following the workshop, the students and teachers were given a quick tour of FCM's labs and studios, including the MOCAP studio, 3D Printing Lab, and Astro Lab. To educate the students about motion capture and 3D printing, Mdm. Rahidah and Ms. Farzura Azreen presented some demos. Before returning to their school, they also get to attend the iCADET Fair at the Sound Stage. It is hoped that the visitors had a wonderful time at FCM and were able to pick up useful information during their visit. The faculty also looks forward to engaging in more productive endeavours in the future.





## FCM Receives a Visit from SMK Putra Perdana

A group of 36 students and 4 accompanying teachers from Sekolah Menengah Kebangsaan (SMK) Putra Perdana made a visit to the Faculty of Creative Multimedia (FCM) on 7 September 2023. The visit commenced with a warm reception from the head of the E-Gallery committee, Dr. Suliana Sulaiman. SMK Putra Perdana is the *Sekolah Angkat* for the faculty.

The students were guided on a tour of the UNLOCK2023 exhibition at the e-Gallery, followed by a visit to the wall of fame showcasing the achievements of the Diploma in Creative Multimedia programme. They also visited the Astro Lab and participated in the “Basic 3D Modelling” workshop, which was conducted by Mr. Nazim Zaki and Ms. Sharafina. The students had the opportunity to learn the basics of modelling using the Autodesk Maya software. After the workshop, the students were

brought to MMU Studios, where they experienced the green screen technology, which was demonstrated by Mr. Burhanuddin. All in all, the students obtained a fruitful learning experience and exposure, and more engagement will be carried out in the future with the faculty.



## MMU President Graces the Opening Ceremony of “Karnival Pendidikan Futuristik” in Pahang

The Student Recruitment and Admission Department (SRAD) recently organised the “Karnival Pendidikan Futuristik” in Pahang on 7 September 2023. Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU, graced the opening ceremony with the presence of representatives from the Kuantan District Education Office and other officers. Prof. Dato’ Dr. Mazliham also delivered a keynote speech titled “Ciri-ciri Peribadi Ke Arah Kejayaan” to 403 students from 20 schools and 67 counselling teachers.



The programme continued with three different workshops, which were conducted by faculty representatives. Other workshops included Useful Engineering Hacks, Creativity, Imagination, & Expression, Build Your Own Mobile App, Introduction to Trading On-The-Go, Sneak Preview: Film@MMU, and Communication is King. While the counselling teachers attended a different session with the MMU President and a forum. It is hoped that the event attendees received beneficial and enjoyable experiences from the programme.

## FOM Empowers Future Accountants via School Engagement Programme

The Faculty of Management (FOM) team, led by Ms. Norzarina Md Yatim, embarked on an enriching school engagement programme at Sekolah Menengah Kebangsaan (SMK) Bandar Puncak Jalil on 13 September 2023. Dr. Abby Ashraff Saprudin, Ms. Nor Hazleza Mohamed, Ms. Noor Shahaliza Othman, Ms. Haslin Johari, and Mr. Zulkefly Yusup joined Ms. Norzarina in this educational endeavour. The programme, which

took place at SMK Bandar Puncak Jalil, aimed to empower students from the Social Science stream by introducing them to the world of accounting through AutoCount Accounting software. This initiative was part of FOM's commitment to fostering financial literacy and preparing the next generation for future careers in accounting.



AutoCount Accounting, a widely used accounting software, was the focal point of the engaging session. The students were given hands-on experience and guidance on how to utilise this software effectively. The programme emphasised the importance of accounting in modern businesses and how mastering accounting software could provide a competitive edge in various industries.



## FCM Academic Staff Shares Expertise to National Art Gallery as Invited Trainer

Madam Mastura Abdul Rahman, a senior lecturer from the Faculty of Creative Multimedia (FCM) at Multimedia University (MMU), was recently invited by the National Art Gallery in Kuala Lumpur to lead an art workshop titled 'Kolaj Dalam Gubahan'. The one-day workshop was part of Balai Seni Negara's programme in conjunction

with 'Pameran NUSA', an exhibition of artworks in the collection of the National Art Gallery.

The workshop was attended by 20 participants from various backgrounds, and Madam Mastura was assisted by five FCM Foundation Students: Ang Li Ying, Azura Anak Sebarang, Lee Qiao Lin, Mughdo Nushin Muniyat, and Nur Hidayah Ayesah Binti Abdullah. The workshop focused on organic and geometric shape composition, using a monochromatic colour scheme and collaging with batik on canvas.

Madam Mastura's expertise as a practising artist and senior lecturer in the FCM department made her the perfect candidate to lead the workshop.



## FOB Students Embark on Heartwarming Kindergarten Visit for English Learning Project



On 5 October 2023, a group of students and their accompanying lecturer, Mr. Vincent Chan from the Faculty of Business (FOB) conducted a heartwarming display of university social responsibility (USR) mission by visiting a local kindergarten, Tadika Sacred Heart in Melaka. The participating students were Alyssa Amir Amirrudin, Matumithraa A/P Muthu Kumar, Nur Ummairah Hajat Shafie, Nurul Husna Ahmad Sallal, and Nurul Syifa Kamarulzaman. They carried out an interesting and engaging activity, Jayden's Story-Board Game. This activity taught the students on the vibrant world of colours and words and

boosted their confidence in storytelling. A total of 5 children aged 5 years old were selected to participate in this activity. The event was also observed by Mdm Colleen Webber, the principal of the kindergarten.

This remarkable event signifies the university's commitment to fostering a sense of community and learning beyond the classroom. It is hoped that more engaging activities could be conducted with different audiences in the future.

## SMK Seri Perak Students Partake in Educational Workshop and Campus Tour

The Faculty of Management (FOM) had the pleasure of hosting a group of enthusiastic students from SMK Seri Perak on 6 September 2023. The day was marked by an educational workshop and an insightful campus tour, making it an enriching experience for the visiting students.

The event commenced with a warm welcome from Ms. Norzarina Md Yatim, FOM's School Engagement Coordinator. In her opening address, Ms. Norzarina expressed her delight at welcoming the students from SMK Seri Perak to the FOM campus and highlighted the significance of educational



exchanges and collaborative learning experiences. Following the welcoming speech, the students were introduced to an informative AutoCount Accounting workshop led by Dr. Abby Ashraff Saprudin, a renowned expert in the field. The engaging and interactive session allowed the students to ask questions and participate actively in discussions, making it a highly beneficial experience

.After the enriching workshop, the students were treated to a campus tour, allowing them to explore the FOM facilities and get a feel for university life. They had the opportunity to visit classrooms, libraries, and other key areas of the campus, giving them a glimpse into the academic environment they may one day be a part of.



## LiFE Organises MUET Webinar



English Unit of Learning Institute for Empowerment (LiFE) has successfully organised a Malaysian University English Test (MUET) webinar, recently. A total of 124 participants from Multimedia University and other institutions joined this webinar. Conducted by four MUET experts namely Dr. Ng Yu Jin, Dr. Jane Cheok Mei Lick, Mdm. Maziyah Hj. Mazlan and Mr. Divakaran Adiyam Purath Kunjan, the webinar served as a platform to provide participants with valuable tips, test-taking strategies, and techniques to apply when answering MUET papers.

Besides featuring the MUET experts as the speakers, the event's huge success was also attributed to the hard work and total commitment from the organising committee and continuous support from LiFE management, LiFE members, MMU community as well as TM community.

All in all, the webinar has greatly benefitted the participants in equipping them with the required skills, knowledge, and strategies to sit for MUET.

## MMU and DBP Join Hands for “Karnival Dekad Bahasa Kebangsaan dan Dekad Membaca Kebangsaan 2023”



Multimedia University and Dewan Bahasa dan Pustaka (DBP) worked hand in hand to organise the annual celebration of “Karnival Dekad Bahasa Kebangsaan dan Dekad Membaca Kebangsaan 2023” at Dewan Tun Canselor, Cyberjaya campus.

The launching ceremony was officiated by YAB Datuk Seri Anwar Ibrahim, the Prime Minister with the presence of other dignitaries including Puan Fadhlina Sidek, Ministry of Education, Datuk Zainal Abidin Putih, Chairman of Telekom Malaysia, Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU and others.



Held from 25 until 27 October 2023, the carnival also witnessed the launching of ADIK (Adik Digital Inovatif Kreatif) which was inaugurated by Dato’ Dr. Anwar Ridhwan, Chairman of the Board of Directors of DBP. Among other activities including digital interactive activities, digital exhibitions, Malam Bahasa Jiwa Bangsa, Simfoni Rohani, and many more.



## Empowering School Teachers & Education Officers with Digital Skill Training

The Faculty of Business (FOB) in collaboration with the Melaka State Education Department (Sektor Sumber Teknologi Pendidikan, Jabatan Pendidikan Negeri Melaka) conducted a

Knowledge Transfer Programme titled “Bengkel Penguahan Budaya Digital” workshop on 24 October 2023 at the Melaka campus.



Dr. Siti Zakiah Melatu Samsi, FOB Dean initiated the programme, culminating in a one-day intensive training to equip educators with the skills necessary to thrive in the constantly evolving digital landscape of content creation and education. The training drew 56 participants, including Melaka District Education Officers (PPD Melaka) and regional school teachers. The event focused on harnessing the potential of cutting-edge tools such as ChatGPT and Canva in an educational context.

This initiative reaffirms the FOB’s dedication to bridging the gap between traditional teaching methods and contemporary digital tools. It represents a pivotal step in ensuring educators are well-prepared to deliver relevant and captivating learning experiences for students in today’s digital age.



## ‘Sekolah@MMU’ Nurtures Digital Talent in Sabah

The ‘Sekretariat Sekolah@MMU,’ in partnership with the MMU Student Lifestyle & Experience, organised the ‘Sekolah@MMU’ Digital volunteer programme Sabah Edition at SMK Kuhara, Tawau. This initiative, which has been running since 2003, aimed to boost digital literacy and empower students. A total of 120 participants from SMK Kuhara engaged in

activities like HTML coding, video editing, entrepreneurship modules, and group exploration from 13 until 15 October 2023. The ‘Sekolah@MMU’ Digital Volunteers, made up of 35 MMU students, played a significant role in spreading digital initiatives and government policies. The programme also saw the establishment of a ‘Sekolah@MMU Studio,’ a

‘Green Screen’ facility for student use, developed in collaboration with the Yayasan Universiti Multimedia (YUM) and Telekom Malaysia (TM) Sabah. The event was inaugurated by YB Datuk Andi Muhammad Suryady bin Bandy, M.P. Of Kalabakan highlighting the importance of digital advancement for all in the era of the Fourth Industrial Revolution. The event was also attended by Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU.

## Fostering Secondary Students' Interest in Accounting via AMISAQ 2023



ACCA-MMU Inter-School Accounting Quiz or known as AMISAQ was successfully concluded on 14 October 2023 at the Melaka campus. This event was organised by the Faculty of Business (FOB) in collaboration with the Student Recruitment and Admission Department (SRAD) and its strategic partner and main sponsor, the Association of Chartered Certified Accountants (ACCA).

AMISAQ is a national-level accounting quiz that aims to test Form 5 secondary school students on their general knowledge and understanding of the accounting field as well as to provide a platform for them to build networks across schools, university, and professional body. A total of 1,077 students from 114 schools participated in this year's event. The event was divided into a two-day event where the qualifying round was held on 30 September 2023 through an online

platform and it was officiated by Dr. Hasmida Jamaluddin, Deputy Dean of FOB, and Madam Nalini, Director of SRAD.

In the final round, six finalists competed for the championship title at Persada Permata Dunia. The competition began with a welcoming speech by the event director, Mdm Norliza Darus, while the closing ceremony was officiated by Dr. Siti Zakiah, Dean of FOB, and Mr. Peter Gabriel, Business Relationship Manager of ACCA Maritime Southeast Asia. The finalists were evaluated by Mr. Sim Siew Han, partner of the audit and assurance services at Baker Tilly Melaka, and Dr. Akhma Adlin and Dr. Yip Yen, FOB lecturers.

As a result, Sekolah Menengah Kebangsaan (SMK) Tengku Mahkota, Johor was announced as the champion and the team walked away received a cash prize of RM1,500 and the school also received a cash prize of RM300. SMK Tung Hua, Sarawak, and SMK Puteri, Negeri Sembilan won first runner-up and second runner up respectively. The winning teams received cash prizes of RM1,200 and RM1,050 and the schools received RM200 and RM150, respectively. In addition, three schools namely SMK Bukit Mertajam, Pulau Pinang, SMK Jitra, Kedah, and SMK Simpang Rengam, Johor secured third runner-up and won RM750 for each team and each school received RM100.



Ts. Dr. Lim Kok Yoong, Dean of the Faculty of Creative Multimedia (FCM), and Ms. Nadia Mahmud, its Deputy Dean attended the 2023 Asian League of Institutes of the Arts (ALIA) General Assembly and Symposium. Hosted by the Korean National University of the Arts (K-Arts), the symposium carried the theme of Arts and Arts Education for Sustainable Development.

During the event, Ts. Dr. Lim Kok Yoong delivered a talk on “Design Literacy for Sustainable Creative Multimedia Education in Malaysia”. His presentation outlined the faculty’s vision to cultivate a culture of design literacy within creative multimedia education in Malaysia, driven by the principles of sustainability. By emphasising the importance of design thinking, user-centered design, and ethical considerations, he shared FCM’s vision to empower students to become agents of positive change. This exchange of ideas and best practices will undoubtedly contribute to the continued growth and improvement of arts education on a global scale. For the record, MMU has been an active member of the ALIA since 2017, standing alongside other top-notch art universities in the world.

## Faculty Leaders Participate in the 2023 ALIA General Assembly & Symposium



## FCM Dean Takes Centre Stage at International Design Forum in Shanghai



Ts. Dr. Lim Kok Yoong, Dean of the Faculty of Creative Multimedia (FCM), representing Multimedia University (MMU), delivered an online presentation at the 4th Scientific Design International Forum (SDIF) held in Shanghai, China, by the Shanghai University of Engineering Science on 4 November 2023.

The Scientific Design International Forum, established in September 2019, has successfully brought together design researchers from China, Japan, Korea, and nearby regions. This year, under the theme “DESIGN – CONNECTION,” the forum emphasised collaboration and academic growth. Dr. Lim presented his insights on

“Design Literacy for Sustainable Creative Education”, which highlighted the importance of design literacy in shaping the future of creative education. This initiative not only showcased innovative teaching methods but also encouraged fellow educators and researchers to explore sustainable and diverse approaches to design education. His participation in the Special session undoubtedly contributes to the continuous development of the design field, making a positive impact on society.

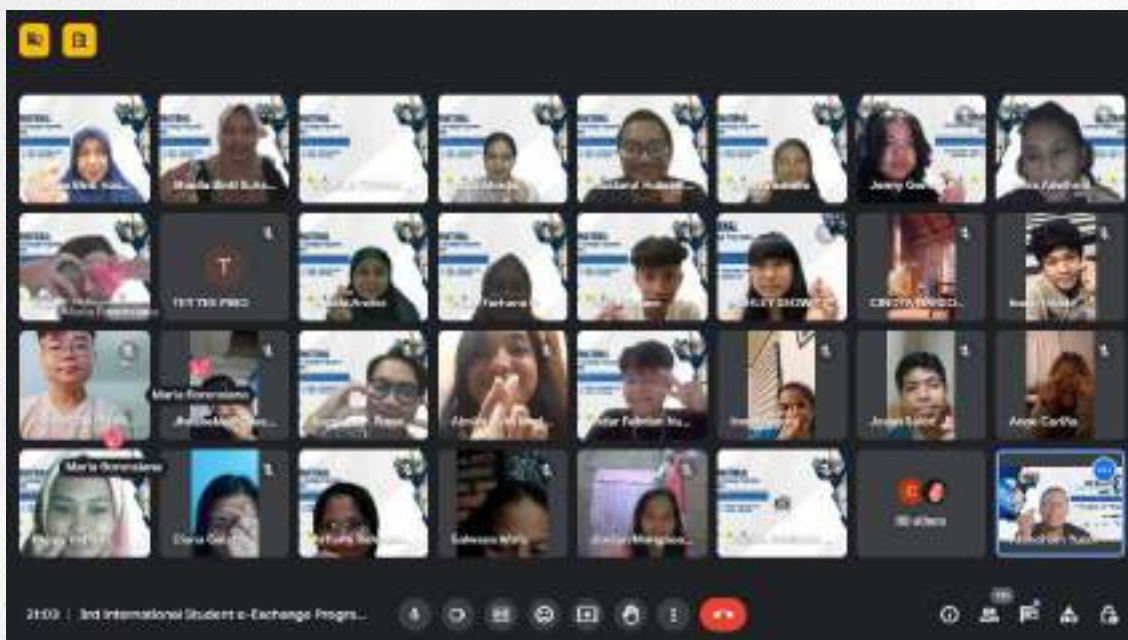
A total of 60 YUM's Ibnu Haitham Scholars recently underwent transformative training with Lawrence Walter Seminars LWS Strategic Group on 8 November 2023 at the Cyberjaya campus. The session, "New Beginning Kick Start YUM: Preparing for the New Journey," was conducted by Tn. Hj. Dr. Zander Iskander, a senior certified international master trainer. En Izad Ismail, Director of YUM delivered his welcoming remarks to the participants during the event.

The programme aimed to instil The Winning Mindset, Power Communication, Inspiring Personality, and Career Readiness in shaping the students into extraordinary (XO) graduates. This strategic partnership between YUM and Lawrence Walter Seminars LWS Strategic Group highlights a shared commitment to empowering young talents, and bridging the gap between academic excellence and practical skills. Beyond the training room, the collaboration anticipates a global impact, as newly empowered YUM Scholars are poised to make positive contributions.

In this engaging training, scholars actively participated, leaving no stone unturned in unlocking their potential. The collaboration marks a significant step in the holistic development of young talents, ensuring they positively influence their communities and the wider world.

## **Ibnu Haitham Scholars Partake in Development Training**





## FOB Hosts a Virtual Talk with 5 Varsities Students

On 13 December 2023, Dr. Afandi Yusof, the deputy dean of Student Experience and Alumni from the Faculty of Business (FOB), spearheaded an enlightening virtual talk aimed at 120 enthusiastic students and staff members representing five esteemed universities: Multimedia University (MMU), Universitas Pakuan and Universitas Mercu Buana, and Universitas Dian Nuswantoro from Indonesia along with University of the Cordilleras in the Philippines.

The session focused on leveraging ChatGPT functions ethically. Dr. Afandi skillfully elucidated the art of formulating precise inquiries and providing clear instructions when engaging with ChatGPT, imparting invaluable knowledge on harnessing the technology effectively. Beyond the tutorial on ethical utilisation, ChatGPT offers a myriad of benefits that

significantly augment various fields. Its prowess in natural language processing empowers users across industries, fostering enhanced customer service experiences through chatbots capable of prompt and accurate responses. Furthermore, in education, ChatGPT serves as an invaluable tool, supporting students' learning processes by providing personalised tutoring, elucidating complex concepts, and offering a diverse array of educational materials.

Additionally, ChatGPT's capability to generate creative content fosters innovation in marketing strategies, content creation, and even artistic endeavors, exemplifying its versatility and profound impact across professional spheres. The participants showed enthusiasm during Dr. Afandi's session underscores the wide-ranging potential of ChatGPT and its role in revolutionising how we interact with technology in a multitude of domains.

## FOB & FOM Organise Sharing Sessions with Dr. Ariel Rosita King



A total of 21 Fundamentals of Marketing subject students from the Diploma Faculty of Business (FOB) gathered to explore the dynamic realms of marketing with Dr. Ariel Rosita King, the Chief Executive Officer of Dr. King Solutions and Founder & President, Ariel Foundation International on 23 November 2023. Hosted in collaboration with students from Universitas Pakuan Indonesia (UNPAK), this immersive experience unfolded under the banner of “Youth as the Changemakers of Today.”

The event, centered around the theme of empowering young minds, delved into the role of today’s youth as catalysts for change in society. Dr. Ariel Rosita King, renowned for her expertise

in social marketing, guided the students through an inspiring journey aimed at fostering social impact solutions and cultivating innovative business ideas.

The interactive session witnessed a fusion of diverse perspectives as students from diverse cultural backgrounds and academic institutions came together to share insights and exchange ideas. The event not only strengthened academic ties between FOB and UNPAK but also highlighted the importance of international collaboration in nurturing the next generation of changemakers.

Dr. Ariel Rosita also spent her time with students and staff from the Faculty of Management- FOM

on 22 November 2023. Ts. Dr. Jimmy Low Jing Hong, the FOM dean extended a warm welcome together with Dr. Abdullah Al Mamun Sarwar, Deputy Dean of Student Experience and Alumni.

The faculty facilitated two insightful sharing sessions, where the first session titled “Seminar with MMU Students Navigating VUCA World: Strategy for Undergraduates,” which was dedicated for students, while the second session entitled “Embracing the VUCA Challenge: Preparing Students for an Uncertain World” was dedicated to academic staff.



## FCI KTP Programme Cultivates Interest in STEM

The Faculty of Computing and Informatics (FCI) hosted its Knowledge Transfer Programme (KTP) titled “Inspiring the Next Generations,” recently. Led by Ts. Dr R Kanesaraj with Yayasan Universiti Multimedia (YUM) as their Strategic Partner, the programme brought an engaging and innovative learning experience to students, with a focus on creativity, hands-on activities, and friendly competition. A total of 21 students from Sekolah Jenis Kebangsaan Tamil (SJKT) Ladang baru, Kuala Selangor participated in these 4 weeks programme with sessions every Saturday. As one of the remote schools in Selangor, technology is one of the challenges as the students have limited access to it. Hence, with the objectives of cultivating interest in STEM among learners, no students shall be left behind in experiencing the current technology.

This programme took eager participants on a journey from Arduino novices to confident creators of smart systems. The students were introduced to the basic C++ programming theoretically and hands-on programming using Dev



C++. During the C++ programming class, the students delved into simple and advanced programming concepts, including loops and conditional statements. Then they were exposed to the world of Arduino and the fundamental programming skills needed to create smart systems. They started with basic components, mastering the use of the Arduino IDE, and practicing simple LED control. They also explored the use of various sensors and actuators, learning how to integrate them into real-world projects. The final week emphasised more advanced programming and preparation for the Smart System Design Competition, which marked the culmination of the programme where students demonstrated their creativity and technical skills. The competition criteria included creativity, functionality

, presentation skills, Arduino programming expertise, and the overall design of their projects. This programme opened doors to the world of technology for the participants, providing them with opportunities to explore their potential and create creative smart solutions. Their projects truly exemplified their hard work and dedication throughout the training program. The closing ceremony was officiated by Mr. Mohd Adib Zahidi, Penolong Pegawai Pendidikan Daerah Kuala Selangor. In his speech, he commended the initiative by the faculty in providing a platform for the students to indulge in new knowledge and experience designing using technology. The programme was well concluded with the unwavering support of SJKT Ladang Kampung Baru and YUM.









## GENDER EQUALITY

# "Achieve gender equality and empower all women and girls."

*MMU is deeply committed to acknowledging and harnessing the innate potential of individuals, regardless of gender distinctions. From its inception, the university has been driven by the vision of cultivating top-tier human capital, embracing diversity, and fostering inclusivity.*

*In line with this ethos, MMU stands firm in its dedication to meritocracy, where opportunities are bestowed based solely on the merits of individuals rather than predetermined societal constructs such as gender, ethnicity, or socioeconomic background. By championing a culture of equality and fairness, MMU not only empowers its students and staff to excel but also sets a precedent for broader societal progress towards gender equality and inclusivity.*

## MMU Amnesty Club's Inspiring Visit to Empower Rohingya Women

A group of students from the MMU Amnesty Club embarked on a meaningful journey to Gombak, Selangor, where they visited the Rohingya Women Development Network (RWDN) on 18 August 2023. The organisation serves as a beacon of hope for Rohingya women, with a focus on education, healthcare, economic empowerment, and advocacy for their rights.

Although the process proved labour-intensive, with 600 strings required to create a single tassel for a pair of earrings, the students immersed themselves in the activity with enthusiasm. The visit also featured a delightful taste of authentic Rohingya cuisine, satisfying the participants' palates with flavours and warmth. The day concluded with an entertaining



During their visit, the students gained invaluable insights into the challenges and daily lives of Rohingya women living in Malaysia. They were also exposed to a hands-on session where they learned to craft tassel earrings, a significant source of income for Rohingya women.

game, leaving everyone with cherished memories. Despite the shortness of the trip, it was both enlightening and enjoyable, allowing the students to develop a deeper understanding of the challenges faced by the Rohingya people, especially women, and raising awareness about their circumstances.

## Dr. Olivia Receives Women in Strategic Trade (WiST) Honors Pioneer Award



Dr. Tan Swee Leng, Director of Technology Transfer Office (TTO) was awarded WiST Women in Strategic Trade Honors Pioneer Award under the academia category on 24 October 2023. Dr. Olivia received the award from Yang Berbahagia Dato' Hairil Yahyi Yaacob, Secretary General of the Ministry of Investment, Trade, and Industry during the 2nd Annual Women in Strategic Trade (WiST) Forum. This forum gathered top government regulators as well as industry experts who were involved in strategic trade law, export controls, customs regulations, supply chain security, sanctions, and compliance standards. The event served as an avenue to empower women in the field of national Strategic Trade Management (STM). For the academic category, three nominees were selected including University Kebangsaan Malaysia (UKM) and Universiti Teknologi Malaysia (UTM) and MMU was selected to receive the award.



### Dr. Vimala Receives Golden Visa UAE Award



Ts. Dr. Vimala Perumal, a senior lecturer in the Faculty of Creative Multimedia (FCM) and leading Tamil film director in Malaysia was awarded the Golden Visa UAE Award in Abu Dhabi on 17 January 2023. The Golden Visa is intended to enhance the global image of the UAE, and it is typically granted to international leaders and celebrities based on specific guidelines established by the government.

In recognition of Dr. Vimala's accomplishments as a prominent film director in Malaysia and internationally, the UAE government extended an invitation for her to consider the UAE as a second home and explore opportunities in the filming industry. Dr. Vimala is the first Malaysian film director to receive such an award, along with her talented husband, Denes Kumar, who received the award under the artist category. Previous recipients include Bollywood star Datuk Shah Rukh Khan and renowned fashion designer Giorgio Armani.



## Dr. Olivia Shares Her Insights at the LexisNexis Southeast Asia International Women's Day

Dr. Olivia Tan Swee Leng, Director of Technology Transfer Office was invited as one of the panelists for the LexisNexis Southeast Asia International Women's Day on 10 March 2023 in Melaka. Among other panelists were retired Federal Court Judge Datuk Dr Badariah Sahamid and Tan Hui Wen, Senior Associate in Skrine. The panel was moderated by Thina Mariappan, Senior Legal Counsel, LexisNexis Southeast Asia, which participated by more than 100 attendees.

With its theme "Embracing Equity", Dr. Olivia delivered her perspectives on the differences between equity and equality and the importance to understand the concepts. She also highlighted on the inclusion and diversity aspects that need to be focused on. More interesting topics were discussed during the one-hour forum. The attendees received insightful points of view from the panelists and gained aspiration to continue being empowered women.





## Raja Permaisuri Agong Makes a Visit to MMU Cyberjaya Campus

Multimedia University (MMU) is honoured to receive a visit by Raja Permaisuri Agong Tunku Hajah Azizah Aminah Maimunah Iskandariah and members of 30th Triennial World Conference 2023 of The Associated Country Women of the World (ACWW) at the Cyberjaya campus on 21 May 2023. The guests were welcomed with a cultural dance performance followed by a Durian Cook Book presentation

and social innovation showcase entitled 'Lorong Belakang' during the event. The members of ACWW also had the opportunity to tour the campus facilities including Smart Farming Lab, Smart Home, Hybrid Innovative Learning Spaces, green screen production, and others. It is our hope that all members of the conference would gain wonderful and memorable experiences at MMULand.



## FOM Lecturer Conducts Workshop for TSM Research Centre in India

Assoc. Prof. Ts. Dr. Magiswary Dorasamy, our academic staff from the Faculty of Management (FOM) was invited to share knowledge on how to conduct Systematic Literature Review using NVivo software, recently. Organised by the Thiagarajar School of Management (TSM), also the MoU partner of the Centre of Excellence for Knowledge and



Innovation Management (CEKIM) since 2019, is a renowned B School in Madurai, Tamil Nadu with a rich legacy of 60 years and is consistently one of the top 100 B- Schools in India.

This workshop was held to strengthen the research and publications of TSM's Research Centre established in 2020. The two-day workshop which was held in a hybrid mode on 31st March and 1st April 2023, was attended by 75 researchers from TSM and various universities in India (online). The sponsorship by TSM to Dr. Magis for this workshop will contribute to MMU Myra's points.





## CLEAN WATER AND SANITATION

# “Ensure availability and sustainable management of water and sanitation for all”

*The sustainable management of water resources stands as a cornerstone for fostering economic growth, productivity, and societal well-being. Access to safe water and sanitation not only underpins the foundation of thriving communities but also serves as a catalyst, amplifying the returns on investments made in healthcare and education.*



## MMU Launched Its Sustainability Policies: Water



### Declaration of Commitment (Water)

Water supply is an essential element in ensuring the quality of learning and working experiences for students and staff within MMU’s campuses. It is the university’s responsibility to guarantee a sufficient supply of safe water for everyone’s consumption and optimization. This policy aims to ensure effective water management, provide quality water supply, and reduce wastage. The custodian of this policy is the Facilities Manager appointed by the University. In order to achieve these goals, Multimedia University shall:

1. Continuously improve water consumption efficiency by implementing the Water Policy.
2. Align with local and international sustainable initiatives, such as SDG 6 (Clean Water and Sanitation) and 13 (Climate Action) (United Nations’ Sustainable Development Goals).
3. Ensure the availability of resources to support the relevant goals.
4. Procure and utilize current and cost-effective water-saving technologies throughout the campuses, especially in critical areas such as toilets.
5. Use rainwater for non-essential purposes, such as plant watering and drain cleaning.
6. Educate, communicate, raise awareness, and motivate students and staff to practice water conservation.

Boundary: MMU Melaka and Cyberjaya Campus.

The MMU Energy and Water Management Committee is responsible for overseeing water efficiency practices, assisted by the Facility Manager. The management will collaborate with relevant stakeholders to discuss water consumption performance and review water-saving activities to ensure they meet the objectives and targets.

Note: This is part of our initiatives for Climate Action.



## AFFORDABLE AND CLEAN ENERGY

**"Ensure access to affordable, reliable, sustainable and modern energy for all."**

*In today's modern era, society heavily relies on energy to function effectively. However, given the limitations of our current technological capabilities, the availability of energy resources is restricted, and the methods used for energy production often pose significant harm to the environment.*

*Acknowledging this pressing issue, MMU has implemented its own Energy Policy, which involves regular monitoring to ensure compliance and actively encourages its community members to be mindful of their energy usage. Through these efforts, the organisation strives to promote sustainability and environmental responsibility while fostering a culture of responsible energy consumption among its constituents.*

## MMU Alumnus Achieves Another Milestone: Launch of EV Super App.

Tan Aik Keong, our Permata Dunia who is also the Founder and Chief Executive Officer of Agmo Group achieved another milestone when his company launched the Agmo EV SuperAPP at e-Gallery, MMU Cyberjaya campus on 13 June 2023. The ceremony also witnessed the exchange of the Memorandum of Understanding (MoU) between Agmo and Alibaba Cloud. YB Chang Lih Kang, Minister of Science, Technology and Innovation and Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU were invited as the guests of honour during the event. Among other attendees were Mr. Kun Huang, representative of Alibaba Cloud and other staff. A panel discussion on 'The Future of Electric Mobility in Malaysia: Opportunities & Challenges for Industry & Government' was also held during the event.

Featuring key industry speakers namely Ts. Dr. Abdul Hakim Abdul Rahim, Project Lead-Technology Solution Group (Mobility) of Malaysian Green Technology & Climate Change Corporation (MGTC); Ir Mohd Junaizee Mohd Noor, Head of Stakeholder Management of Tenaga Nasional Berhad; Azrul Reza Aziz, Chief Executive Officer of Malaysia Automotive, Robotics & IoT Institute (MARii); Ahmad Rais Johari, Software Lead V2G UiTM- PETRONAS Project, Micro Industry Hub, Battery Energy Storage Technology (BEST) of Engineering College, UiTM and Mr. Tan Aik Keong himself, the panellists shared their insightful perspectives on the discussed topic.



## Alumni- Alma Mater Initiate Collaborative Efforts on EV Charger

Mr. Ts. Ir. Jason Siow Jat Shern, our Permata Dunia from the Faculty of Engineering (2007) made a visit to the Cyberjaya campus on 22 June 2023. Mr. Jason is the Chief Business Operation of Energreen Tech Sdn Bhd. The

company focuses on bringing excellent and high-quality products by leveraging in-house innovative technology to shape the future of the green energy industry in Malaysia.

As we are aware, the market for electric vehicles (EV) has grown rapidly in recent years and the EV charger placement on campus will be marked as one of the remarkable signatures for the university, specifically at the Faculty of Engineering (FOE). This collaborative effort also signifies the giving back to alma mater initiative by Mr. Jason. It is hoped that this initiative would open up more opportunities for engagements and strengthen the relationship between MMU and its Permata Dunia in the future.



## FOE Organises KTP to MYSkills Foundation

The Faculty of Engineering (FOE) organised a Knowledge Transfer Program (KTP) for MySkills Foundation and Baker Hughes Malaysia, recently. The KTP initiative was led by Ir. Dr. Siow Chun Lim and assisted by team members Ir. Dr. Siva Priya, Ir. Assoc. Prof. Dr. Gobbi Ramasamy, Dr. Teh Chin Hui, and Dr Ngu Eng Eng. The KTP's objective is to disseminate knowledge on the above technologies to the volunteers of the two organisations, who in turn will disseminate the knowledge to the current and future students of MySkills Foundation.

Phase I of the KTP involved two workshops; Photovoltaic Technology Fundamental and Electric Vehicle Fundamentals. A hands-on workshop on PV technology was conducted and participants also had an opportunity to visit the FOE Energy lab to observe the research being done on EV battery repurposing and repackaging. In Phase II now, the FOE team is working closely with the volunteers on the curriculum syllabus

development. Phase III of the KTP is anticipated to take place in December 2023, where a PV exhibition will be held at the MySkills campus and participated by the foundation's students.

MySkills currently have a PV system installed on their campus rooftop at Kerling. With the knowledge gained from the workshops, MySkills can now analyse the power generated from the existing system, and plan by themselves for future expansion of the PV system based on their requirement.



# DEWAN TUN CANSELOR





## DECENT WORK AND ECONOMIC GROWTH

**"Foster sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all."**

*MMU serves as both an educational institution preparing the workforce of tomorrow and a dynamic environment where careers are cultivated and elevated. Emphasising a positive work ethic, the university instils this mindset in its students through direct and indirect means, fostering a culture of productivity and professionalism.*

*Moreover, MMU fosters an entrepreneurial spirit, recognizing its pivotal role in generating employment opportunities within the community. By nurturing an ecosystem conducive to entrepreneurship, the university not only addresses graduate unemployment but also stimulates economic growth on a national scale, paving the way for increased business ventures and sustainable development.*

## MMU Receives Acknowledgment at Graduates' Choice Award (GCA) 2023



MMU was awarded the Graduates' Choice Award (GCA) as one of the Top 10 universities under the Private Higher Institution category. The award was received by Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development at Sunway Resorts Hotel on 6 December 2023.

The GCA Graduate Choice Award recognises "Best Graduate Employers" in Malaysia, which covers across many industries including accounting and professional services, telecommunications, e-commerce, education, and many more. The award's results are 100% determined by the votes cast by university students, making it the definitive voice of the future workforce. The process was audited by a distinguished Board of Audit Members composed of representatives from various universities.



MMU President, Professor Dato' Dr. Mazliham Mohd Su'ud was also in attendance during the event as he was invited by the organiser to be one of the award presenters. Thank you to the MMU community for your continued support in elevating the university to greater heights!



## Discovering Industrial Experience via Alumni Sharing Session

More than 70 students participated in a virtual sharing session by Mr. Alan Keh Wee Khang, Senior Resource Planning Specialist from Infineon Technologies on 22 December 2022. Mr. Alan who was the FOB Permata Dunia majoring in BBA (Hons.) International Business shared his inputs and experiences on a topic entitled "Working Experiences of a Business Graduate in the MNC".

The session kicked off with a welcoming remark by Dr. Tan Pei Kian, Head of the International Business Department. In the sharing session, the speaker elaborated on his personal experience and valuable knowledge of working in a multinational company. He also shared some tips and advice on how to adapt to working life, especially when dealing with different people from different countries. All in all, it was a fruitful sharing, and it helped the students to prepare themselves for the transition from university life to working life.



## Acquiring Knowledge of New Amendment to the Employment Act

A group of students from the Faculty of Business (FOB) majoring in the Human Resources Management (HRM) programme attended an industry talk on the New Amendment to the Employment Act 2022 by Mr. Toh Siew Pat, recently. The speaker is an HRD Corp Accredited Trainer, Freelance HR, and IR Trainer & Consultant.

Mr. Toh, who is also the industrial advisor of the HRM programme, enlightened on the new amendments which covered employees who earn below RM4,000 and with other exceptions, calculation of wages for incomplete months of work, limitation on salary advances, wages paid through financial institutions and other forms of payment and maternity leave and allowance during the talk.

The amendments allow employees to apply for flexible working arrangements, increase paternity leave, and provide greater protection against all types of harassment and discrimination, among others. All in all, the students gained new updates and attained the required knowledge of the Employment Act, which is the main forte of HR professionals and for general knowledge as well.





## MMU Receives Recognition at GCA 2022

Multimedia University (MMU) received recognition when the university is listed among the Top 10 in the Private Higher Education Institution at the Graduates' Choice Award (GCA) at Sunway Resort on 5 January 2023. Dr. Ong Jeen Wei, Director of Alumni Engagement, Career and Entrepreneurship Development (ACED) representing the university to receive the award and certificate during the ceremony. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU also graced the occasion with his presence and was invited to become one of the award presenters at this prestigious ceremony. Organised by Talentbank, this award ceremony announced the nation's Most Preferred Graduate Employers to Work for in 2022.



The Graduates' Choice Award or known as GCA is Malaysia's most authoritative graduate employer branding award and recognises 48 respective industries including accounting and professional services, e-commerce, automotive, telecommunications, and others. Also attending the award ceremony were Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development (SEED), Mr. Albert Quek, and Ms. Putri Syaidatul Akma Mohd Adzmi, Deputy Directors of ACED.



## FOM Invites An Industry Speaker to Elucidate the Digital Transformation Roadmap and Experiences

A group of Bachelor of Digital Enterprise Management (BDEM) students from the Faculty of Management (FOM) participated in an interesting talk on Digital

Transformation Roadmap by Mr. Koay Tze Siang, Senior Director of Dell cum General Manager of Dell Cyberjaya on 4 January 2023. Mr. TS Koay spoke on the process of digitalisation and its impacts on everybody. Job productivity, staff empowerment, and cost reduction are some of the tangible benefits reaped by Dell computer in their digital transformation. Dell Digital, Dell's very own IT organisation has been developing future-ready solutions to meet ever-changing business needs internally, driving innovation and creating a cultural shift throughout the company. Mr. TS Koay also outlined a systematic 2 years training program for fresh graduates joining Dell and that at the end of the training period, the recruits will be automatically promoted.





## Successful Permata Dunia Shares His Entrepreneurial Journey

Mr. Terry Swee Chee Yoong, Managing Director and Founder of Vesbo Malaysia was invited to share his entrepreneurial journey in a virtual industrial talk on 18 January 2023. Mr. Terry, who is also our Permata Dunia, graduated in 2011 and delivered his talk entitled “Challenges and Opportunities in International Trade” to 103 undergraduate students from the Faculty of Business (FOB).

The session kicked off with a welcoming speech by Dr. Susan Chin, who is the subject lecturer for International Trade and Policy. Mr. Terry shared his experience as he started his own company and venture overseas. He also gave some tips on how to think and act fast, especially when you are dealing with overseas counterparts. All in all, it was a fruitful sharing and the attendees gained valuable knowledge and insights into becoming an international business entrepreneur.

## FOM Invites an Industry Speaker to Elucidate “Success vs Leadership” among the Graduates

A group of Bachelor of Digital Enterprise Management (BDEM) students from the Faculty of Management (FOM) participated in an interesting talk on Success vs Leadership by Mr. Davendran M, Senior Delivery Manager, BAE and Trovicor on 13 January 2023. According to Mr. Davendran, in general, industrial needs students with a complete package to be plugged into their delivery process. A complete package means a combination of hard and soft skills. This seminar has given an idea to students on how to acquire leadership skills and make it successful in their fundamental preparation for the industrial zone. Leadership skills are the part of soft skills an organization is looking for.

Trovicor is a world leader in a turnkey end-to-end lawful interception and intelligence solutions. Trovicor provides the tools for law enforcement, public safety, and government intelligence communities in the fight against drug trafficking, cyber money laundering, human trafficking, terrorism, and other criminal activities conducted over today’s telecommunications network, the internet, and social networks. Tworkscor works with governments and law enforcement agencies around the world to design and tailor lawful interception and intelligence solutions to fit specific requirements.



## FET Hosts Virtual IAP Visit and Industry Forum

The Faculty of Engineering and Technology (FET) together with its Industrial Linkage Committee (ILC) hosted an annual virtual Industrial Advisory Panel (IAP) Visit and Industry Forum 2022 on 13 January 2023. A total of 10 Industrial Advisory Panels (IAPs) of four respective engineering programmes of FET namely Bachelor of Engineering (Hons.) Electronics majoring in Telecommunications (TE), Bachelor of Engineering (Hons.) Electronics majoring in Robotics & Automation (RE), Bachelor of Engineering (Hons.) Mechanical (ME), and Diploma in Mechanical Engineering (DME) were invited to participate in this one-day event.



The visit was officially kicked off with an opening speech delivered by Assoc. Prof. Dr. Fazly Salleh Abas, Dean of FET. In his speech, Dr. Fazly highlighted the benefits of Artificial Intelligent (AI) elements in engineering courses and the threat of AI Technology namely ChatGPT to the education sector. After the opening session, the IAPs were assigned to individual programme breakout presentation sessions led by the respective Programme Coordinator (PC): Dr. Lim Tian Sze (TE PC), Dr. Lim Chee Siong (RE PC), Dr. Lim Boon Kian (ME PC), and Mr. Jee Kian Siong (DME PC). On top of that, an online industry forum entitled “Engaging the collaboration between University-Industry: What is the successful model?” featuring the perspectives of panelists across multidisciplinary engineering fields was opened to the Faculty staff and student participation.

## MMU and OCBC Bank Sign Pact for Industrial Exposure and Acquisition

Multimedia University (MMU) signed a Memorandum of Understanding (MoU) with OCBC Bank (M) Berhad at the Cyberjaya campus on 6 March 2023. Signing the cooperation agreement were Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU and Mr. Toh Kean Chung, Head of Application Engineering of OCBC Bank.

The ceremony also formalised the cooperation between both parties in exposing the use of information and communication technologies as well as computer science in the banking industry. On top of that, this signing ceremony also marked the continuous partnership between industry and academia in bringing significant benefits to the MMU community.





## MMU Inks MoU with Infineon Technologies to Renew Partnership



On 8 March 2023, MMU and Infineon Technologies (Malaysia) Sdn. Bhd. signed a renewal Memorandum of Understanding (MoU) to enhance the cooperation and relationship between the two parties in Melaka. The pact was signed by MMU President Prof. Dato' Dr. Mazliham Mohd Su'ud and Senior Vice President and Managing Director of Infineon Technologies Mr. Eng Seng Meng.

The MMU delegate was briefed on Infineon's development and activities during the event. They also were taken for a tour of the business premise in Batu Berendam. MMU and Infineon have worked closely since 2009 and engaged with many joint events including Infineon Week, Industrial Sharing Session, training, students internship, and others.

It is hoped that this bilateral relationship will continue to prosper and continue to strengthen the academia-industry partnership. Also attending the event were Dr. Mohd Rizal Abdul Razak, Melaka Campus Director; Assoc. Prof. Ir. Ts. Dr. Ng Poh Kiat, Dean of Faculty of Engineering and Technology (FET); Dr. Siti Zakiah Melatu Samsi, Dean of Faculty of Business (FOB) and other FET members.

## Fostering Relationships and Strong Rapport between Staff

Kelab Rekreasi & Kebajikan Staf MMU (MESRA) organised a fishing activity in Kelong Acheh, Mersing Johor from 11 until 12 March 2023. The activity was participated by 13 staff from both Cyberjaya and Melaka campuses. The participants enjoyed the fishing as it could positively affect their physical and mental health. It is also an ideal team-building activity as it is a fun, dynamic, and goal-oriented activity. More activities will be conducted by MESRA in strengthening the relationship and strong rapport among MMU employees.



On 10 March 2023, Multimedia University (MMU) received a visit from the delegation from Datasonic Group Berhad to the Cyberjaya campus. Led by its Executive Chairman Datuk Haji Hanifah Noordin, the guests were briefed on the university development by MMU President Prof. Dato' Dr. Mazliham Mohd Su'ud.

The visit continued with the discussion of exploring possible collaboration that could be achieved between both parties. Datasonic Group Berhad is one of the prominent security-based ICT solutions providers in Malaysia. The strategic cooperation between MMU and Datasonic would create synergies and bilateral benefits.

## MMU and Datasonic Group Berhad Explore Opportunities for Collaboration



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## Career Connect Hosts Monthly Talk "CAREER MATTERS"

Career Connect Centre hosted CAREER MATTERS PODCAST SERIES as a monthly, live talk series featuring potential employers from various industries. The series was hosted by two students from the Faculty of Computing and Informatics (FCI) namely Addina Mohd Amlı and Mohd Azriy Akmalhazim Mohd Nazariee, and streamed to the MMU's official social media platforms, Youtube channel and Facebook page.



For the first series titled "Designing Personal Brand: LinkedIn and Resume", Lynn Lim, Chief Operating Officer of PEOPLElogy, and Debbie Neoh from Jabil Circuit Sdn Bhd were invited to elaborate more on the topic on 8 February 2023. Lynn Lim highlighted building students' skill sets based on industry standards, and Debbie Neoh talked about having the right attitude toward a career.

While the second episode focused on the topic "Get a Job or Start a Business?", where Permata Dunia Azaini Aizat, Founder and Business Operational Manager of Flow Studios Sdn. Bhd. and Mughilen Rathakrishnan, Director and Chief Executive Officer of WEPS Sdn. Bhd. were the speakers on 9 March 2023. The student hosts explored the differences between becoming an entrepreneur and working for others. The speakers also provided insights into what to expect and how to make the best choices possible. It is hoped that the audience gained insightful knowledge and input from these interesting podcast series.



## EDC & MMU Founders Club Develop Entrepreneurial Roadmap

Entrepreneurship Development Centre (EDC) organised eCadet Round Table session at Cyberview Resort & Spa on 2 March 2023. Among the attendees were representatives from MMU Founders Club namely Mr. Steven Low Kang Wen, Mr. Azril Hanafi and Mr. Fariz Hamdi Mohd Nor; Entrepreneurship Advisors Datuk Salmah Hayati Ghazali and Mr.



Daniel Cerventus as well as Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development (VP SEED) together with Alumni Engagement, Career, and Entrepreneurship Development (ACE) team.

The session served as an avenue for the team to develop an entrepreneurial roadmap through productive brainstorming and idea validation sitting. All participants were able to refine the ideas by benchmarking other international universities and start-up communities that have successfully implemented the culture and continue to produce successful start-ups. The session successfully achieved its goal and the team would continue to work hand in hand with MMU Founders Club to establish prolific outcomes.

## Vision of Youth Entrepreneurs (VYE) Empowers Students' Entrepreneurial Spirits

KPMG MMU Ambassadors in collaboration with MMU's Entrepreneurship Development Centre (EDC) kicked off its first episode of Vision of Youth: Entrepreneurs – The Series on 3 March 2023. The event was officiated by Alumni Engagement, Career and Entrepreneurship (ACE) Deputy Director, Ms. Putri Syaidatul Akma Mohd Adzmi, and a representative from KPMG Malaysia, Mr. Uqail Esa. VYE aimed to empower students' entrepreneurial spirits through a collaborative and casual forum. The first episode featured Mr. Hanif Marzuki and Mr. Aniq Amrez, Chief Executive Officer (CEO) and Chief Operating Officer (COO) of Youth Venture Asia respectively.

The session was followed by 100 participants gaining insights and views on the discussion including first-hand experiences in managing the business. It is hoped that the participants obtained insightful perspectives and get inspired in venturing into the entrepreneurial path.



## 100 Participants Join Career Talk in Accounting



On 26 March 2023, a talk session entitled “Laluan Kerjaya Akauntan Bertauliah” was held for 100 participants from all over Malaysia to explain the basic requirements of accounting careers, qualifications, and pathways. The session was conducted by Dr. Noridayu Abdullah Sani, a lecturer from the Faculty of Business. During the session, various questions were asked, including which programs are offered to proceed with a degree in accounting, the length of the programs, potential institutions to further study, and which program is the most popular.

The session aimed to provide the participants with a comprehensive understanding of the various

pathways and opportunities available in the field of accounting. Participants were given detailed information on the basic requirements needed to pursue a career in accounting, including the necessary qualifications, skills, and knowledge. The session also highlighted the different career paths and opportunities available to individuals with an accounting degree, such as accounting, auditing, taxation, and financial analysis.

One of the key topics covered during the session was the various academic programs available to individuals interested in pursuing a degree in accounting. Participants were provided with information on the different program options, including the length of the programs, potential institutions to further study, and which program is the most popular. This information was designed to help participants make an informed decision when selecting a program that best suits their career aspirations.

In summary, the information session was a valuable opportunity for participants to gain knowledge from the expert. It also provided valuable information on the various academic programs available to individuals interested in pursuing a degree in accounting, as well as the different career paths and opportunities available in the field. Overall, the session was a valuable resource for those looking to start or advance their careers in the field of accounting.



## VYE Explores Legal Challenges in Leading an Organisation

The second episode of Vision of Youth: Entrepreneur-The Series (VYE) was concluded on 31 March 2023. Organised by KPMG MMU Ambassadors in collaboration with Entrepreneurship Development Centre (EDC), this episode featured Mr. Justin Johari, our very own lecturer from the Faculty of Law (FOL) sharing his insights on the topic entitled “Legal Challenges in Leading an Organisation”.



The event which was moderated by Ms. Fatin Nadirah, our student from the Faculty of Management, enlightened the audience on the issues including undefined business structure, work policies and others. It is hoped that all participants have obtained new knowledge in terms of legal perspective in establishing businesses or becoming entrepreneurs.



## Students Explore Opportunities via Career Connections

Career Connect Centre and MMU Melaka Career Club successfully organised the first Career Connections event at the CLC Melaka campus on 29 March 2023. More than 200 students attended the event to explore career prospects with 15 hiring companies namely EMCO Executives Sdn. Bhd., Vivahomes Realty, Prudential, Cohu Malaysia Sdn. Bhd., Claz'room College, CSC Steel Sdn. Bhd., Kibing Group (M) Sdn. Bhd., ICAEW, Dynacast, Theador, Caliph Group, Crimson Logic, KPMG Malaysia, Juristech, Cheng & Co Group. The session

kicked off with a career talk and advice by Nala Groups highlighting the process and procedures of working overseas as well as some resume tips. After that, the students took the opportunity to meet and discuss many career choices with the participating companies.

It is hoped that this event would assist the students to establish networking with their future employers and at the same time enhance their self-development and skills. The second session of Career Connections took place in June 2023 at the Cyberjaya Campus.

Career Connect successfully organised the first major Career Fair for 2023 at MMU Cyberjaya on 23 and 24 May 2023. The Career Fair is co-organised with Talentbank as the major sponsor and coordinated with about 60 student committee members. More than 50 companies joined the event which included Sunway groups, IOI properties, Axiata Future Lab, Coca-Cola, Maybank, Toyota, and many more. Close to 1400 students attended the two-day event which shared various information on future careers and internship opportunities.

The event began with a panel discussion on the morning of 23 May with guest speakers, Dr Soo Wincci and YM Raja Azura Raja Mahayuddin. The event closed with the Centre for Alumni Spotlight Series with a prominent alumnus, H.E Ibrahim Ameer, who is also the Finance Minister of the Republic of Maldives. His Excellency was also happy to grace the closing ceremony along with the President of MMU, Prof. Dato' Dr. Mazliham Mohd Su'ud, and the CEO of Talentbank, Mr. Ben Ho. The next Career Fair was scheduled at Melaka Campus on 16 and 17 August 2023

## Career Connect Organises Career Fair 2023 at Cyberjaya Campus





## iCadet Fair Allows Students to Meet Industry Partners



Multimedia University (MMU) through its Market Exploration, Engagement and Touchpoint (MEET) organised iCadet Fair at both Cyberjaya and Melaka campuses on 4 and 5 April 2023, respectively. The event received a warm response from students and participating companies, who are the iCadet programme partners. MMU President, Prof. Dato’ Dr. Mazliham Mohd Su’ud also made a brief visit and met with the attendees during the fair.

iCadet is the university’s initiative to groom students into industry-ready graduates, where students would undergo activities with the companies or organisations including industrial attachment, industry-based assignments, industrial final year projects and many more. This is a great opportunity for students to explore the industrial environment and culture as well as for self-development.

## Students Gain New Perspectives and Knowledge in LinkedIn Workshop

A LinkedIn Workshop was jointly organised by the Multimedia University Business School and the Faculty of Business (FOB) on 11 April 2023. With the exciting theme of “Are You LinkedIn Or LinkedOut?”, the event was participated by 320 participants at the Melaka



campus. The participants partook in three different sessions titled “Ways to Rock Your Profile”, “Understanding about Applicant Tracking System” and “Virtual Industry Exposure” by Mr. Liew Won Han (Recruitment Analyst) from Petron Malaysia.

In today’s day and age, where LinkedIn is fast proving to be a platform beneficial to not just professionals, but also to students alike, hosting a workshop on LinkedIn for students will surely help them in decoding ways to have a stunning profile on LinkedIn and also to network their way into the professional world. The participants were exposed to LinkedIn which enables them to showcase their profile, expertise, recommendations, and connections.

Various career opportunities in Petron Malaysia were also exposed during the workshop. Through this exposure, the participants are able to build themselves to become more valuable members of society with the rewarding components and experiences gained through the event. Dr. Yeo Sook Fern, Deputy Dean of Research & Industrial Collaborations, Mr. Kay Wan, Vice President of Business in Junior Chamber International Malacca City Entrepreneur (JCIMCE), Human Resources Programme Lecturers, and committee members also attended the event.



## Students Obtain Insightful Knowledge in Business Career Workshop

A Business Career Workshop was jointly organised by the Multimedia University Business School and the Faculty of Business (FOB) on 25 March 2023. With the theme of “Moulding The Future Ready Graduates”, participants partook in two sessions namely “Discover Yourself” by Ms. Len Xin Yi (Allianz Academy Trainer) and “The PowerPlan of Success” by Mr Dennis Chin (Head of Partnership, Sales & Marketing Communication from Allianz Life Insurance Malaysia Berhad).

In the first session, the participants were exposed to identifying their personality type and how to fit in multinational organisations through the DOPE test. The test also helped the students to understand their strengths and weaknesses as well as their unique differences as individuals. These elements are crucial to strengthen the relationships among team members.

Various career opportunities in Allianz Life Insurance Malaysia Berhad or known as The Allianz C.E.O Programme were exposed during the second session of the workshop. The one-year programme is specially crafted to fast-track the growth and path to success. Through this exposure, the participants are able to build themselves to become more valuable members of society with the rewarding components and experiences gained through the event.

## Students Participate in Annual Office Open Day at Dassault Systèmes Malaysia

A group of 15 students was invited to attend the Annual Office Open Day at Dassault Systèmes Malaysia on 11 May 2023 in Bandar Utama, Petaling Jaya. The participants were involved in enjoyable engagements such as fun games, group activities, and sharing sessions with the company representatives and others. The event was also joined by other students from different universities.

At the end of the activity, winners were awarded prizes and all participants were rewarded with gifts from the company. The students were also escorted around the office to view the office space and facilities provided. The company then opened up the session for internship questions and answers and allowed the students to straightaway fill up the form for internship applications in various areas such as software development, content writing, and many more. This event is a great opportunity for students to get closer to the company and widen their networking.



## “Jom Kacau Dodol” Programme Strengthens Relationship Among Staff

Kelab Rekreasi & Kebajikan Staf MMU (MESRA) organised “Jom Kacau Dodol” programme at the Melaka campus on 11 April 2023, the initiative was taken to align with the upcoming Aidilfitri celebration. The programme was also supported by Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU.



Through this programme, this activity has fostered teamwork and strengthened the relationship among MESRA members. At the end of this programme, the members distributed the dodol via the drive-thru and the community was elated to receive the sticky and sweet treat for the upcoming Aidilfitri celebration.

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## More Notable Alumni Return to Campus for Sharing Session

Centre for Alumni (CfA) and faculties coordinated three sessions of ‘Permata Dunia Returns’ on 5 May, 8 May, and 12 May 2023 respectively. Mr. Fikri Zamri, a YouTube influencer shared his insights on “Creating Inspiring Videos” with the students at the MMU Cinema. Mr. Fikri, our Permata Dunia from the Faculty of Cinematic Arts (FCA), shared some tips with 30 students on how to create an honest travel video in an effective way. He builds his name and has succeeded to help rebuild the tourism industry by making travel videos that inspire people to travel and heal the emotional trauma from the recent pandemic outbreak.

Another session featured Mr. Puven Sangaran, the Chief Executive Officer (CEO) of CTOS Basis Sdn Bhd talking about “Basic Commercial Models: How to Think about Business Problems”. Mr. Puven graduated from the Faculty of Engineering and Technology (FET) in 2006. The session was attended by 30 students from the Faculty of Management (FOM). The attendees were enlightened on how to generate more profits and which business model to be followed for business sustainability. He also shared his journey in the business world to inspire current undergraduate students. The final session was conducted by Ms. Sharifah Nur

Izni Wafa Syed Naquib Wafa, Regional Manager, Communications & Strategic Programmes of TM sharing some insights on the topic entitled “From Misunderstanding to Understanding: Communication Tools for Navigating Cultural Differences”.

A total of 60 students from the Faculty of Applied Communication (FAC) joined the session and gained insightful knowledge on how to overcome barriers to effective communication and other relevant knowledge on communication. Thank you to our Permata Dunia for sharing your industrial knowledge and experience with our students. It is indeed a great way to contribute back to your alma mater!





## MBA Students Gain Fresh Insights on Organisation Transformation

A group of Master of Business Administration (MBA) students from the Melaka campus had an opportunity to share their learning journey through a session that was held virtually recently. The session was conducted by an experienced industrialist, Mr. Julian Tan Wei Chieh, Head of Field HR of QDR Stores Sdn.



Bhd. He has vast industrial experience as he held various positions for the past 25 years.

QSR Brands (M) Holding Berhad is the only vertically integrated food operator in Malaysia, priding itself with farm-to-fork products and services. It is also the holding company for the famous fast-food chain, Kentucky Fried Chicken (KFC). Prior to his attachment with QSR, Mr. Tan worked at Philip Morris for the past 20 years.

Entitled "Impact to Organisation due to Transformation", our students were enlightened about the current transformation that is taking place in the industrial sector, especially after the post-pandemic era. The students gained fresh insights which has surely benefited the students to adopt and adapt in their professional life.



## Alumni Share Knowledge and Industrial Experience via Permata Dunia Returns

Centre for Alumni (CfA) has initiated a new segment, Permata Dunia Returns as an avenue for alumni to share their knowledge and industrial experience with MMU students. This initiative also helps to build a strong relationship between alumni and their alma mater. Mr. Tuan Faisal Azmy Tuan

Kob, Chief Growth Officer from Nexagate Sdn Bhd kicked off the segment with a sharing session with the Faculty of Engineering (FOE) students on 10 April 2023. Mr. Tuan Faisal elaborated on his industrial experience and content related to the topic entitled 'Engineering to Creative Growth'.

The programme continued with Ms. Jen Yong Huey Yi, Founder, and Chief Executive Officer of Syndes Technologies Sdn. Bhd. sharing about the importance of digitalisation as well as telecommunication with the students of the Faculty of Computing and Informatics (FCI) on 14 April 2023. On the same date, Mr. Shahir Sayyid Damanhuri, CEO of Shahir Solutions also spent his time teaching and guiding the students from the Faculty of Information Science and Technology (FIST) on how to excel in C++ programming. Another Permata Dunia Returns session was held with Mr. Sim Wee Seng, Senior Product Designer, Airbase on 19 April 2023 via virtual mode. The students gained new insights about UI/UX elements and their correlation in the creative industry. In a nutshell, this segment helps the students to understand real-life experiences and to develop graduate work readiness. Massive gratitude to Permata Dunia who supported this initiative for the students' benefit.

## Three Alumni Share their Industrial Experiences and Insights



A sharing session was organised by the Faculty of Business for the current MBA students, recently. The session was conducted by three Permata Dunia who shared their experiences and insights from the industry.

The first speaker, Ms. Chen Ling Hong graduated with a BBA (Hons.) International Business programme, is the Senior Regional Talent Acquisition Specialist at Deloitte Consulting SEA explained the campus

recruitment, employer branding strategies, and talent management. She also shared her knowledge of current recruitment trends, AI recruitment, and her experiences working in various industries and regions. The second speaker, Ms. Nachiyamal Samuhum, who is currently an Analyst at Lazada Group Malaysia in Account Operations (Electronics), is also an MMU MBA and BBA alumni. Previously, she worked as an Associate in Operations (Merchant Operations) at Shopee Mobile Malaysia Sdn. Bhd. She expounded on the e-commerce trends with the audience.

Last but not least, the sharing session was delivered by Ms. Krista Kaur, who works as a Care and Success Management Assistant under the Customer Experience Division at Swift, a financial tech company, and is also an MMU MBA and BBA alumni. She shared her diverse working experience in various industries and offered motivation to the current MBA students in their job search.

The students received valuable advice on the current transformation in the industrial sector, new trends in recruitment, and overall operations in e-commerce businesses. The session left the students with fresh insights that will surely benefit their professional lives.



## HCM Hosts Free Vehicle Inspection Campaign by PUSPAKOM



Human Capital Management (HCM) launched an initiative for a safe 'balik kampung' trip via a free vehicle inspection campaign on 11 April 2023 at the Cyberjaya campus. In conjunction with the Aidilfitri celebration, a total of 43 MMU staff vehicles underwent inspection by the PUSPAKOM during the event.

PUSPAKOM or the Computerised Vehicle Inspection Centre, is appointed by the Malaysian government to undertake all mandatory inspections. Through this programme, the inspection also helped the owners to be aware of the condition of their vehicles using computerised equipment and send their vehicles for proper maintenance service for safe driving during the festive season.



Cyberjaya Accounting Club (CAC) collaborated with its strategic partner and sponsor, ICAEW to organise the Career Jumpstater 2023 at the Cyberjaya campus, recently. The event began with speeches by Dr. Abdullah Sarwar, Deputy Dean of Student Experience & Alumni of the Faculty of Management (FOM) and Ms. Loh Wei Yuen, Head of Malaysia for ICAEW.

The event was designed to provide students with the necessary skills to jumpstart their careers, with a focus on securing internships and job placement with various firms, including the Big 4 companies, medium accounting firms as well as non-accounting firms. The event took place in three different locations, with company booths in the Multipurpose Hall (MPH), interview session in MPH Extension as well as workshops and panel discussions held in Learning point.

Ten companies were invited to participate in the event including Petronas, Deloitte, Gamuda, KPMG and others. Attendees were able to experience a seamless flow of activities and the event helped to open up more opportunities for them to network with industry professionals and gain important industrial insights.

## Students Obtain Networking Opportunities via Career Jumpstarter 2023



## FET Students Experience Simulations for Building and Structures

A total of 24 students from the Faculty of Engineering and Technology (FET) attended the virtual industrial talk session on 'Simulations for Building and Structures' on 27 April 2023. Organised by the Industrial Linkage Committee (ILC) of the faculty, the sharing session was conducted by Mr. Wilson Kong, Application Engineer & SIMULIA certified Abaqus Specialist, RF Station Sdn Bhd.

Mr. Wilson has a wide experience in Finite Element Analysis (FEA) for structures and buildings, product design and optimisation and Computational Fluid Dynamics (CFD) for structures and buildings. He shared his overview of the real-life scenario for a case study using the Computer Aided Engineering (CAE) analysis method and tool. The students were exposed to the functions of simulation in the engineering field, how simulation is done by using Finite Element Analysis and Finite Volume Method, and how simulation is able to overcome common industry challenges. Lastly, Mr. Wilson shared the beautiful sentence "When simulations meet measurement, the future is now in your hands".



## Empowering New Talents for GRADUAN Ambassador



MMU GRADUAN Ambassador, Lashvini Velao from the Faculty of Business (FOB) shared her insights in a talk session related to the Ambassador programme and GRADUAN Aspire 2023 Career Fair on 6 May 2023 at the Melaka campus. The talk programme was also conducted by Ms. Amelia Suh and Ms. Shairah Hazman, Public Relations (PR) and Events Executives of GRADUAN explaining the GRADUAN introduction, the benefits of being the ambassador as well as branding oneself and networking. Jointly organised by GRADUAN and MMU Students' Representative Council, and

aimed to seek new talents or successors from the university to become the next GRADUAN Ambassador 2023. Lashvini has been the GRADUAN Ambassador representing MMU for three consecutive years and this is her final year serving the term. GRADUAN is the leading career resource in Malaysia, trusted by both job seekers and employers in the country for its talent recruitment and employer branding services.

MMU students are given the opportunity to attend the GRADUAN Aspire 2023 (Career Fair) at KL Convention Centre on 20 May 2023. This is a great avenue for the students to widen their networking and enhance their soft skills for their future careers.



On 9 May 2023, the Faculty of Business (FOB) organised an industrial talk entitled "A Trainer's Journey in the Industry" at the Melaka campus. The event was organised by BBA (HRM) students who are currently undertaking BT3024 Training and Development subject, handled by Dr. Kavitha Raman. Dr. Afandi Yusof, Deputy Dean for Student Experience and Alumni of FOB graced and officiated the session which was attended by nearly 50 students. Among other attendees were Dr. Cheah Chew Sze, Head of Department of HRM Unit, and other academic staff.

The session was conducted by Ms Leelavathi Subramaniam, and Ms Ananthi Sankaran and they shared their experiences as obtained insightful knowledge and tips on the qualities, job content, skill requirements, and future development as a trainer. The speaker also emphasised on some practical work skills and experience including how to design training courses, how to conduct training evaluations, how to interact effectively with the trainees and others. All in all, the students gained relevant knowledge through this inspiring and engaging session.

## Acquiring Knowledge on Trainer's Journey in the Industry





## FOM Hosts the Entrepreneur Digitalisation Course 2023

The Faculty of Management (FOM) successfully hosted the “Kursus Pemerkasaan Usahawan Ke Arah Digitalisasi” at the Cyberjaya campus on 9 May 2023. The event was organised by the Federal Agricultural Marketing Authority (FAMA) for its entrepreneurs from the Sepang district.

The course helped to expose entrepreneurs to the Agrobazaar Online platform as a medium to market their products and to encourage cashless payment in their business transactions. The course focused on the modules including Debit – Maybank QR Pay, Boost – duitnow QR Code and Entrepreneur registration onto the Agrobazaar Online (ABO) platform.

Congratulations to all participants, including MMU staff who successfully completed the course. The event was also graced by Puan Fairosnisa Md Desa, Deputy Director (Development) FAMA Selangor, Ts. Dr. Jing Hong Low, Dean of FOM, and Encik Mohd Khairol bin Rasit, Officer from FAMA Sepang.



## Gaining Insightful Knowledge of Fintech

On 6 April 2023, Career Connect centre organised a Career-Meets-You programme at the Cyberjaya campus. It was conducted by Ms. Sheryl from Juristech Sdn. Bhd., who highlighted the topic entitled “Career of the Future: The Fintech Experience ” to almost 30 students from various faculties in Cyberjaya. The programme started with an ice-breaking session and free gifts were awarded to active participants during the discussion.

At the end of the event, the Deputy Director of Alumni Engagement, Career and Entrepreneurship Development (ACE), Mr. Albert Quek, took a few minutes to provide information on the roles of the Career Connect centre in assisting students to become job-ready graduates.

The Career-Meets-You programme aims to engage students with various companies from different industries, particularly business-to-business companies, which are not quite popular with students. It is hoped that the programme will create more awareness among students of different career prospects and choices.





## FAMA & EDC Join Hands for New Breed Marketing Entrepreneur Programme



On 17 May 2023, a collaborative event between the Selangor Federal Agricultural Marketing Authority (FAMA) and Entrepreneurship Development Centre (EDC) was held at Dewan Tun Canselor, Cyberjaya campus. The event was called “New Breed Marketing Entrepreneur”, where the participants were exposed to entrepreneurial knowledge with digital marketing methods as well as listening to sharing sessions by successful entrepreneurs. MMU President, Prof. Dato’ Dr. Mazliham Mohd Su’ud had the opportunity to visit

each stall and was briefed on a variety of local products. MMU through its eCadet initiative helps the students to discover their entrepreneurial skills by actively engaging the students with the companies’ founders as mentors. As FAMA produces and nurtures many local entrepreneurs, it gives an avenue for MMU students to learn more through this strategic partnership.

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A total of 100 students from Multimedia University (MMU) attended the GRADUAN Aspire 2023 at KL Convention Centre from 20 until 21 May 2023. Lashvini Velao, the GRADUAN Ambassador 2023 was also invited to participate in the event. This vibrant career and networking fair attracted a diverse range of talented individuals to explore their career paths. The event was kicked off by an opening speech by Mr. Nabil Marie, CEO of GRADUAN.

One of the highlights of the GRADUAN Aspire Career Fair 2023 was the presence of esteemed guest YB Hannah Yeoh, the Minister of Youth and Sports. Her attendance at the opening ceremony exemplified the event’s significance and received tremendous appreciation from both participants and organisers. Her presence underscored the government’s commitment to empowering the youth and supporting initiatives that foster their professional growth. The event attendees also gained insightful knowledge from forum sessions during the event. They also had the opportunity to listen to representatives from the participating companies during the Employer Engagement throughout the event. It is hoped that the event would open more opportunities for the students to broaden their horizons in charting their future paths.

## 100 MMU Students Attend GRADUAN Aspire 2023 in Kuala Lumpur





On 23 May 2023, the Faculty of Business (FOB) organised an industrial talk exclusively for the final year students, which was conducted by Mr. John Lau, the Head of Sales at Manulife Insurance Berhad. The talk was titled “Introduction to Insurance Industry and Career Opportunities”, where the talk provided valuable insights into the insurance industry and highlighted the various career prospects available to the students.

A total of 26 students from FOB actively participated in this enlightening event. Mr. Lau commenced the talk by sharing general information about the insurance industry in Malaysia. He provided a comprehensive overview, discussing the fundamental concepts, principles, and functions of the insurance sector. This introductory session allowed the students to gain a solid foundation and a clearer understanding of the industry.

Throughout his presentation, Mr. Lau emphasised the multitude of career opportunities within the insurance industry. He enlightened the students about the diverse roles and responsibilities that exist, ranging from sales and marketing to underwriting, claims management, and risk assessment. By shedding light on these career options, he aimed to encourage the students to consider pursuing a career in the insurance field.

One of the significant highlights of Mr. Lau’s talk was his discussion on the potential for part-time and full-time employment in the insurance sector. He pointed out that students could engage in part-time positions while pursuing their studies, which would not only provide them with valuable work experience but also contribute to their personal and professional

## Gaining Valuable Insights into Insurance Industry and Career Prospects



growth. Additionally, he elaborated on the benefits of full-time employment in the industry, including job security, competitive remuneration packages, and opportunities for career advancement.

Furthermore, Mr. Lau shared real-life success stories of individuals who started their careers in the insurance industry and have achieved significant accomplishments over time. These anecdotes served as inspirations, demonstrating the vast potential for growth and success in the field. The talk was indeed a valuable event for the final-year students as it provided them with a comprehensive understanding of the insurance industry in Malaysia, enlightened them about the range of career opportunities available, and motivated them to explore the industry as a potential career path. The students left the talk with increased knowledge, valuable insights, and a newfound enthusiasm for the insurance sector.

## MMU Students Gain Insightful Inputs on Data and AI

On 18 May 2023, a career talk by KPMG Malaysia titled “Data and AI: How to Thrive in Business” was held at the Cyberjaya campus. The speakers were Ts. Au Soon Yong, Executive Director and Head of Digital Lighthouse at KPMG Malaysia and Mr. Tan Tein Wei, Business Development and Special Project Manager, KPMG Digital Lighthouse. The talk highlighted how AI is used to analyse data for auditing and a demo was also conducted on dashboard management for the technology.

The session was attended by near to 30 students mainly from the Faculty of Computing and Informatics (FCI) and the Faculty of Information Science and Technology (FIST). The event was organised by Career Connect in collaboration with KPMG MMU Ambassadors. The talent acquisition team from KPMG Malaysia was also present during the event.



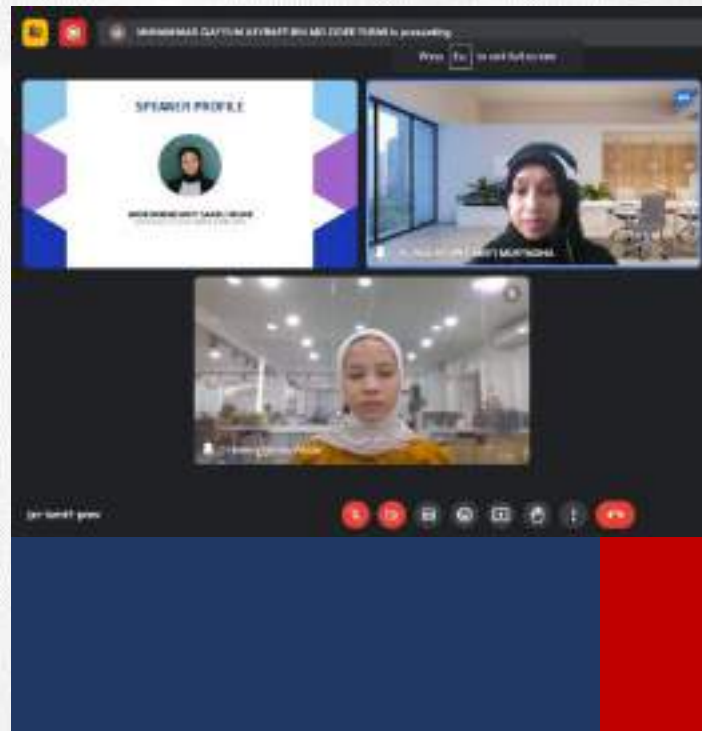
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## Career Connect Hosts GRADUAN Resume Bootcamp

Career Connect in collaboration with Career Connect Club Melaka and KPMG MMU Ambassador organised a workshop on how to write an effective resume on 17 May 2023. It was conducted virtually and was attended by almost 50 participants who are final-year students and students seeking internship placements who wished to gain insights into writing a good resume.

The boot camp was conducted by GRADUAN, a talent recruitment company with 29 years of experience assisting organisations to source great talents. The boot camp highlighted the do’s and don’ts of writing a resume and how to write an application letter which could improve students’ chances of getting a job.

Most importantly, students were also encouraged to do a video resume to showcase their likes, interests, and personality to potential employers. The tips and guidelines on resume presentation are hoped to enable students to communicate their skills and qualities better which will ultimately allow them to land a job in the future.





## FOB Students Acquire Insightful Perspectives from Financial Service Industries

Nearly 150 students from the Faculty of Business (FOB) attended a Finance Talk titled “Financial Freedom Start From Now” at the Melaka Campus on 22 May 2023. Organised by Banking and Finance Department with the support of the Bursa Investor Club, the talk was coordinated by Ms. Hazlaili Hashim as part of the initiative to create awareness of financial literacy among students. Dr. Siti Zakiah Melatu Samsi, Dean of FOB graced the opening session. Among other attendees were Dr.



Dr. Hasmida Jamaluddin, Ms. Shadia Suhaimi, Ms. Faezah Othman, and 20 representatives from the IM100 Mortgage Consultancy and Hong Leong Assurance. The session featured four main speakers for the event. Mr. Jason Ch'ng is a Certified Financial Planner, Development Director of PIT Mortgage Advisory Sdn Bhd, and the co-founder of IM100 Mortgage Consultancy. He shared a few important tips on gaining financial freedom. Mr. Lawrance Siau Meng, from Hong Leong Assurance, highlighted to the students how crucial it is for everyone to plan today for a better tomorrow.

A testimonial from Mr. KJ Lee was added on how successful he is even though he started a career as a financial consultant as a fresh graduate and achieved his financial freedom at a young age. At the end of the talk, Mr. Michael Jau, from IM100 Mortgage Consultancy, the liaison person for the session announced that the company offers 20 pax of internship placement to MMU students if they are interested to venture their future careers in the line of financial services. Overall, the students gained a better understanding of how to achieve their own definition of financial freedom through this inspiring and engaging session.

A Memorandum of Understanding (MoU) was signed between Multimedia University and 2AM Holdings Sdn Bhd at the Cyberjaya campus on 22 May 2023. Signing on behalf of the university was Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Mr. Alvin Kam Lok Kun, Chief Executive Officer & Co-Founder of 2AM Holdings. The pact would help to further strengthen the employability of graduates from MMU. The strategic partnership with the industry has offered the possibility for the university community especially our students to feel close with the industry. Our students would also have the opportunity to complete their internship programme and secure full time employment with the company. Dr. Ong Jeen Wei, Director of Alumni Engagement, Career and Entrepreneurship Development (ACED) together with his team members also present during the event.

## MMU & 2AM Holdings Sign Pact to Elevate Graduate Employability



## FET Permata Dunia Shares Her Journey as Lecturer

The Faculty of Engineering and Technology (FET) organised its Alumni Sharing Session titled “What Does It Take to Become a Lecturer in Engineering Field” on 25 May 2023. The session was conducted by Dr. Zarina Mohd Noh, a Senior Lecturer at Fakulti Kejuruteraan Elektronik dan Kejuruteraan Komputer (FKKEKK) in Universiti Teknikal Malaysia Melaka (UTeM). Graduated with a Bachelor of Engineering (Hons.) Electronics majoring in Telecommunication in 2002, Dr. Zarina elaborated on an academic career in the engineering field.

The session was participated by 20 students from FET, and they listened to the speaker’s personal experiences as well as gained tips and useful information to pursue a career as an academic. She also gave a pep talk to encourage students to do well in their engineering studies and pursue their dreams. The session ended with a short discussion and a Q&A session, followed by the presentation of a souvenir to the speaker. The alumni sharing session received good feedback from the audience who are mainly the first and second engineering students of FET. The students found the event is relevant and informative for their career decision and they are looking forward to more alumni-sharing sessions in the future.



## MMU and Nala Groups Join Hands to Boost Graduate Employability

Multimedia University (MMU) and Nala Groups inked a Memorandum of Understanding (MoU) to build a long-term relationship and work together in boosting the employability of MMU students on 2 June 2023 at the Cyberjaya campus. The pact was signed by Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU and Ms. Alice Wong, Chief Executive Officer (CEO) of Nala Groups.

This new strategic partnership would enhance our students’ preparedness for the job market. It also offers a great platform to receive support as well as assistance from Nala Groups, a professional and legal Human Resource Agency. The delegation also had the opportunity to visit MMU Career Connect Lounge during the event. Among other attendees were Prof. Dr. Wong Eng Kiong, Vice President of Student Experience, Entrepreneurship and Development (SEED); Dr. Ong Jeen Wei, Director of Alumni Engagement, Career & Entrepreneurship Development (ACE) and other MMU officers.





## Launching of i-TRD Lab and ASEAN Investment Challenge 2023



On 7 June 2023, Multimedia University (MMU) its Faculty of Business (FOB) launched the i-TRD Lab which was graced by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Pn. Azizah Mohd Yatim, Chief Executive Officer (CEO) of CGS-CIMB Securities Sdn. Bhd at the Melaka campus. Through this strategic partnership, MMU solidifies its position as one of the LEAD universities in promoting the ASEAN Investment Challenge (AIC) among private higher educational institutions in Malaysia.

## FOE Student Bags Double Win at Huawei Malaysia Sales Elite Challenge 2023

Wong De Quan, our student from the Faculty of Engineering (FOE) together with his team members from different varsities won first runner-up in the group category at the Huawei Malaysia Sales Elite Challenge 2023, recently. The winning team walked away with RM10,000, trophies, and certificates for the achievement. It was a double win for Wong when he also clinched the Top 10 Best Performing Individual with the highest score in the same competition. He received a trophy and a certificate of participation

The Huawei Malaysia Sales Elite Challenge 2023 is a large-scale competition organised by Huawei for Malaysian varsity students. It is a great avenue to enable students to understand Huawei's sales

In 2022, MMU and CGS-CIMB formalised the collaboration with a Memorandum of Understanding (MoU) that grants our students access to stock market simulators. These simulators replicate the real stock market, allowing students to engage in the virtual buying and selling of stocks. By providing this opportunity, students can enhance their understanding of investments, refine their trading abilities, and develop effective strategies before venturing into the livestock market.

On top of that, the momentous day also witnessed the launching of the ASEAN Investment Challenge, which will run from June until July 2023. The challenge invites participants from each country to showcase their trading prowess, with the top three participants from each country advancing to the regional level. At the regional level, these participants will compete for the prestigious title of overall winner and have the chance to claim prizes worth SGD20,000. These initiatives aim to enhance trading skills, particularly in financial market practice, while also promoting the importance of financial literacy among students and the wider community.



positions, learn sales techniques, and test students' abilities to develop innovative, real-world business solutions. In the grand final, the finalists are required to present for 30 minutes on B2B and B2C to the panel judges.

On top of that, there were 6 MMU students who were selected as finalists in the same competition namely Wong Chun Gee (FCI); Celestie Liew Huey Yin (FOM); Yang Jia En (FCI); Lovesh Anand A/L A.Kumereshwaran (FCI); Muhammad Waiee Bin Zainol (FCI) and Darwin A/L Radhakrishnan (FCI). However, Darwin was not able to compete due to the COVID-19 infection.

## FET Students Obtain Industrial Exposure on Reactor Operations

The Faculty of Engineering and Technology (FET) held a virtual FET Alumni Sharing Session on 13 June 2023. The invited speaker, Ts. Dr. Mohd Sabri with a Bachelor of Engineering (Hons.) Electronics majoring in Robotics and Automation in 2009.

Dr. Sabri is currently a Research Officer at the Malaysian Nuclear Agency and he has 13 years of working experience in Control and Instrumentation systems.

Dr. Sabri started his talk with an overview of the history of the worldwide nuclear research reactor. He shared information with the 30 participants on how the instrumentation and control (I&C) systems play a vital role in nuclear reactor operations. He also explained the Act & Regulation and safety review audits procedures of reactor operations. Apart from that, Dr. Sabri shared his personal experience working as an engineer before transitioning to become a research officer at Malaysian Nuclear Agency.



## Students Widen their Network during CAREER CONNECTIONS at MMU Cyberjaya



Career Connect in collaboration with Career Express Club at Cyberjaya campus successfully organised a mini career day or known as CAREER CONNECTIONS at Learning Points, Siti Hasmah Digital Library, MMU Cyberjaya on 14 June 2023. A total of 20 companies participated in the event including Cheng & Co, Reskills, EMCO, AIA Premier, Unicomi, Findtalents, Theodor, and many more.

Reskills, a global online learning platform, offered free resume consultations for walk-in students during the event. On top of that, a live talk was also organised on the same day for the monthly episode of the CAREER MATTERS PODCAST SERIES. The fourth episode featured Mr. Low Sze Chuan, Talent Learning Manager at SkyWorld Development Group discussing the topic "Importance of Networking".



## FOM Alumni Share Perspectives on Their Life Journey



A total of 99 participants, including students, lecturers, and alumni, took part in the first-ever talk event entitled 'Climbing the Ladder: Insights from Economics Alumni', recently. Organised by the MMU Economics Society, two alumni were invited namely Mr. Darren Go, Assistant Manager in Strategy and Transaction at Ernst & Young (EY), and Ms. Vanisa Sukhavudh Charun, who currently works at Bank Negara Malaysia (BNM).

The speakers shared their life journey including their educational experience in university as Economics students and their career stories. The students also gained insightful knowledge on how EY and BNM work and operate through the sharing. Dr. Goh Han Hwa, Programme Coordinator of the Bachelor of Analytical Economics delivered an opening keynote during the event, which raised awareness of the significance of an Economics club at MMU for the event attendees.

The event indicated that MMU has produced a decent quality of Economics graduates, as the course has included all the necessary industry-related skills, ranging from Microsoft Excel to EViews, which are normally required in the workforce.

A total of 12 startups participated in the Entrepreneurship Bootcamp Final Pitch 2023 and presented their innovative business ideas and strategies on 15 June 2023 at the Entrepreneurship Development Centre (EDC) Innolab, Cyberjaya campus. The event witnessed a diverse range of business ideas, reflecting the students' creativity, ambition, and problem-solving abilities. Each team showcased their projects, leveraging the knowledge acquired throughout the boot camp to craft compelling pitches that captivated the panellist consisting of eCadet partners.

The esteemed panellists lent their expertise and experience to the proceedings, serving as a source of inspiration for budding entrepreneurs. Their critical evaluation, insightful questions, and constructive feedback created invaluable learning opportunities for the students, helping them to refine their strategies and strengthen their business models. The Final Pitch concluded with a celebratory atmosphere, as students and panellists mingled, fostering connections and sparking conversations that may pave the way for future collaborations.

## Presenting Diverse Range of Business Ideas at the Final Pitch of Entrepreneurship Bootcamp 2023





## Gaining Insights on Video Game Development from Larian Studios (Malaysia)

A group of students from the Faculty of Computing and Informatics (FCI) and the Faculty of Creative Multimedia (FCM) attended a presentation by Ms. Tomoko Choo, Head of Studio of Larian Studios (Malaysia) for the Career Talk session on 20 June 2023. The speaker shared her insights on her team's experiences, challenges, and cultures in the real-world industry. The students gained an exclusive glimpse into the game development process as well as its creative minds.

During her talk, Ms. Tomoko discussed the wide range of career opportunities available in the gaming industry. Students were encouraged to explore roles such as programming, mocap animation, QA testing, and community management, among others. Additionally, she took the opportunity to promote Larian Studios' latest game trailer, Baldur's Game 3, which is set to launch on August 31, 2023, where it took some time to develop the game. The students also engaged in an interactive Q&A session, and they were thrilled to receive the merchandise from the Larian Studios. This industrial sharing session is vital for our students to receive insightful perspectives and knowledge from the industrial players.



## FET Alumnus Elaborates on Theory Application in the Workplace

Mr. Lim Zhi Hao, Chief Executive Officer and Founder of the Robospace PLT was invited as the guest speaker in the Faculty of Engineering & Technology (FET) Alumni Sharing Session on 8 June 2023. Graduated with Diploma in Electronic Engineering in 2016, Mr. Lim delivered a talk titled "Applying Theory in the Workplace" to the FET students during the session.

He shared his learning journey and emphasised the basic concept of engineering and the application of engineering theories in both the workplace and daily life. Other than studying, Mr. Lim Zhi Hao also actively participated in co-curriculum activities when he was a student. He was the president of the MMU Robotic Club and he joined the student exchange program and other campus activities during his study years.

He explained with these experiences he developed interpersonal and leadership skills. Currently, Mr. Lim Zhi Hao is actively involved in the non-profit organisation and occasionally provides help and guidance to the youth and teenagers who are interested in STEAM education. He encouraged his juniors with Diploma in Electronic Engineering to pursue their passions in engineering for their bright pathway.





## IT Society Club Hosts Tech Career Days on Campus

A two-day tech career fair was organised by the IT Society of MMU Cyberjaya campus from 19 until 20 June 2023. This annual event marked its 10th edition this year which serves as a great avenue for IT students to interact, connect, and network with industry professionals, and gain valuable insights into the current trends in the IT industry. More than 10 companies participated in the event, and students were engaged in activities including industry talks, panel discussions, and interactive workshops conducted by renowned experts in the field. The event also offered an opportunity for students to



expand their knowledge, refine their skill sets, and discover new career prospects. Dr. Ng Kok Why, Deputy Dean of the Faculty of Computing and Informatics (FCI) also attended and showed his support to the event.

## FOM Workshop on Turning Job Seekers into Job Creators with Sekolah Seri Puteri

The Faculty of Management (FOM), in collaboration with Sekolah Seri Puteri, Cyberjaya, organised an informative and engaging workshop on entrepreneurship. The objective of the workshop was to equip students with the necessary knowledge and skills to create jobs instead of looking for them. A total of 30 students representing Kelab Kerjaya attended the workshop at the Siri Lab on 21 June 2023.

In the workshop, Ms. Norzarina Md Yatim, FOM School Engagement Coordinator, spoke about the challenges and opportunities of entrepreneurship and gave real-life examples to inspire and motivate the students. Supported by Ms. Noor Shahaliza Othman and Ms. Nor Hazleza Mohamad, they emphasised the importance of developing an entrepreneurial mindset, identifying

market gaps, and leveraging innovation to create successful ventures. The workshop encouraged active participation through group discussions, brainstorming sessions, and interactive activities. Participants had the opportunity to collaborate and share ideas on various entrepreneurial concepts. Hands-on exercises, such as creating business plans and pitching ideas, were conducted to enhance understanding and application of entrepreneurial principles. The FOM workshop on “Entrepreneurship: turning job seekers into job creators” was a resounding success. The event provided an excellent platform for the students of Sekolah Seri Puteri, Cyberjaya to explore the world of entrepreneurship, develop important skills and gain valuable insights from experienced professionals.



## Instilling the Entrepreneurial Mindset through VYE Series

KPMG MMU Ambassadors in collaboration with MMU's Entrepreneurship Development Centre (EDC) concluded another episode of Vision of Youth: Entrepreneur – The Series (VYE) on 28 July 2023. Featuring Mr. Mohamad Farhan from Social Enterprise Education Lab (SEEd.Lab), the speaker elaborated on the topic titled "Launching Your Social Enterprise", where it related to the understanding the vitality of sustainability and societal impacts in conducting business operations.

The episode was moderated by Ms. Syafiqah, KPMG Ambassador and audience gained a fruitful insight on how to start the social enterprise, and it is a diverse and exciting movement that could change people's life. To foster the involvement of young people in entrepreneurship, SEEd.Lab is opening applications until 11 September to those enthusiastic changemakers who are eager to nurture and transform ideas into sustainable businesses that address Malaysia's social challenges.



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## Over 40 Companies Partake in MMU Melaka Career Fair 2023



MMU Melaka Career Fair 2023 was successfully concluded with more than 40 companies taking part in a two day event at the Exam Hall, Melaka campus. The opening ceremony was officiated by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU. Also present were Mr. Ben Ho, Chief Executive Officer of Talent Bank; Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development cum Melaka Campus Director; faculty deans and other staff. In his speech, Prof. Dato' commended the participating companies for their commitment to nurture talent and offer exciting opportunities as well as invaluable experiences to the MMU students.

Organised by Career Connect club, the event received an overwhelming response from the attendees. The event served as a great platform for students to widen their networking and met with their potential employers, especially for the final year students.



## Gaining Insights on Career Pathway and Challenges of a Professional Accountant

A total of 33 Diploma in Accounting students from the Faculty of Business (FOB) attended an Industrial Talk, titled 'Life After Graduation' on 9 August 2023. This talk was given by Mr. Lem Jense, who is also one of our 'Permata Dunia'. Mr. Lem Jensen currently holds the position of Director in Lem & Chew Associates Sdn Bhd and has several years of experience working with Big 4 accounting firms.



The main purpose of this talk is to expose students to the accounting career path after studies. During the session, the speaker also shared his personal experience, challenges, and success stories of being a professional accountant. Furthermore, he also stressed the importance of having professional qualifications. The session ended with an engaging Q & A session. The knowledge gained from this session will help the students to prepare early to enter the workforce upon graduation. The session was organised by Ms Siow Yung Ern and her team and supported by Dr Afandi Yusof, Deputy Dean, Student Experience and Alumni and Ms Fathiah Hashim, Programme Coordinator of Diploma in Accounting.

## Career Connect and MBSB Bank Join Hands to Equip Students with Workplace Skills

A total of 33 students from MMU Melaka campus participated in a one-day programme titled 'University Career Kickstart' at Doubletree by Hilton, Melaka on 15 August 2023. Organised by Career Connect and MBSB Bank, the programme aimed to provide educational opportunities for attendees to gain insights on career readiness and workplace skills.



Ms. Santhana Krishnasamay, Head of Talent Acquisition and Employer Branding MBSB Bank was invited as the main speaker of the event and shared important insights on the career pathway. The session kicked off with a doa recitation by our student, Muhammad Najmuddin from the Faculty of Information Science and Technology (FIST). Afterwards, a talk on career advice was given by Mr. Farid Basir, Chief People Officer of MBSB Bank.

The students also engaged in an activity called Giant Plunk Puzzle, which fostered their problem-solving skills, logical thinking, creativity and many more. The programme was concluded successfully and all attendees received an RM20 Grab voucher, e-Certificates and exclusive MBSB merchandise as gifts for their active participation. It is hoped that this programme will help the students to acquire new skills and develop workplace skills.

## An Inspiring Entrepreneurial Journey via ZUS Coffee Business Talk

A total of 250 students participated in an engaging and inspirational talk, ZUS Coffee Business Talk, on 25 August 2023 at the Melaka campus. Jointly organised by the Multimedia University Business Society (MUBS) and ZUS Coffee Malaysia, the talk was conducted by Ms. Phoebe Yew, Project Manager, and key senior personnel in ZUS Coffee's COO's Office.

With the invigorating theme of #BrewingSuccessAndBrilliance, this event was a true celebration of innovation, transformation, and the art of business strategy. In her talk, the speaker emphasised two crucial aspects:

“Innovation and Transformation within Zus Coffee” and “Tips on Pitching and Strategizing a Business.” Participants were treated to a wealth of knowledge as they explored the dynamic world of coffee, entrepreneurship, and the intricate mechanics behind creating a successful brand. The event served as a platform for bright minds from MMU to come together, exchange ideas, and learn from the industry's best. The enthusiasm and eagerness displayed by the students were truly remarkable, reflecting their dedication to personal and professional growth. The event facilitated a vibrant exchange of ideas among these bright minds, fostering an atmosphere of learning and growth. The students' enthusiastic participation underscored their dedication to personal and professional development.



## Gaining an Understanding of the Role of Ecosystem Builder



KPMG MMU Ambassadors, in collaboration with MMU's Entrepreneurship Development Centre (EDC), successfully concluded another episode of Vision of Youth: Entrepreneur – The Series (VYE) on 25 August 2023.

The recent episode featured three inspiring speakers, namely Mr. Safuan Zairi (Chief Ecosystem Development Officer of MRANTI), Mr. Adrian (Director of MSD Innovation Sdn Bhd), and Brandon Kok (Co-founder of Kommu Sdn Bhd), alongside Syafiqah, KPMG Ambassador, as the moderator.

The topic of “Role of Ecosystem Builder” was brought forth to understand the vitality of system entrepreneurs in expanding the community of thriving innovators. It is hoped that this forum will benefit attendees by helping them learn and understand how to cultivate the aspiration of being one of the ecosystem builders that contributes to Malaysia's future.



## Infineon Week Strengthens Academia- Industry Bond



Multimedia University (MMU) and Infineon Technologies (M) Sdn Bhd marked the fourteenth year of collaboration and organised the fondly known Infineon Week from 15 August until 18 August 2023. The Infineon Week 2023 is a series of specially designed 4-day collaboration programmes for MMU Engineering and Information Technology students, which included a Factory Visit, Career Talk & Alumni Forum Session, Interview Session as well as Poster and Innovative Project Competition.

This programme not only aimed at building collaborations with academic pioneers who will discover and drive the ways in which engineering and information technologies will enrich the human experience for generations to come and to be leaders, but it also expands the industry knowledge base and attracts premier students to help innovate and transfer semiconductor technology to the commercial industry. The event kicked off with the Factory Visit on the very first day, where a group of engineering and information technologies (IT) students from Multimedia University's Melaka branch

visited Infineon Technologies Melaka on the 15th August 2023. The feedback was very encouraging, as most of the students mentioned that they gained insight into the project management aspect of engineering projects, partially through the tour, while many of them also gained a better understanding of the work environment in the semiconductor field.

The Poster and Innovative Project Competition were scheduled on the fourth day which marked the last day of the Infineon Week. A total of 19 technical posters and 19 innovative projects were presented by both engineering and information technologies participants. The competition and presentation fosters innovation, ideas and creativity in the chosen fields to exhibit the students' and academicians' erudition to the maximum. The Prize Presentation Ceremony concluded the Infineon Week 2023 with the presence of Infineon Technologies, Senior Vice President and Managing Director, Mr. Eng Seng Meng; MMU Vice President (Student Experience and Entrepreneurship Development) and Melaka Campus Director, Prof. Dr. Wong Eng Kiong; Senior Vice President & Chief Technology Officer, Mr. Chan Chee Ling; Assoc. Prof. Ir. Dr. Ng Poh Kiat, Dean Faculty of Engineering and Technology; Senior Management Team of Infineon, MMU staff members and students.

The four-day event not only presented an excellent opportunity to exchange views and innovative ideas among the students, academicians, and staff of Infineon, but more importantly, it also established a fruitful relationship between MMU and Infineon Technologies.



## FCMxFCA i-Cadet Fair Connects Students with Industry Partners

On 23 August 2023, the Faculty of Creative Multimedia (FCM) together with the Faculty of Cinematic Arts (FCA) organised the “FCMxFCA i-Cadet Fair: Creating Creative Connections” that took place at the Soundstage, Cyberjaya campus. The event was graced by Prof. Dr. Ir. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement, and Touchpoint (MEET).

A total of 15 companies participated in this event to expose these young students to the current production pipelines that happen in the industry, with each company having its own unique and individual working styles that suit different students with varied interests in the field. Some of the participating companies were Larian Studios, coming off the success of their recent video game, Baldur’s Gate 3, the Malaysian Embassy of France with a Virtual Reality project to educate French, Bolt Studio, Honor Malaysia, Technorette Sdn Bhd, and RR Infinite Sdn Bhd, among many others.

The event aimed to introduce the students of FCM and FCA to the iCADET programme, an initiative at MMU targeted at all second-year undergraduate students from all programmes and faculties. i-CADET helps to groom industry-ready graduates who provide the right talent for the right industry. The programme also helps to provide the students with early exposure to the industry’s culture, which could prepare them for the real working environment.

As for companies and industry partners, they will be able to coach their Cadets as early as possible and later on recruit industry-ready graduates matched to their company’s needs. Through this initiative, the industries will be able to identify and cultivate good values for our potential MMU talents, and at the same time, iCadet will also produce students who are competitive and always relevant to the industry.





## EDC Hosts an Entrepreneurship Bootcamp in Melaka

An Entrepreneurship Bootcamp (E101) was successfully held at the Melaka campus on 4 September 2023. A total of 24 participants participated in the programme, and they were exposed to developing a fundamental understanding of account management. Organised by the Entrepreneurship Development Centre (EDC), the bootcamp was conducted by Dr. Noridayu Abdullah Sani, our academic staff from the Faculty of Business (FOB).

With its title, “Boost Your StartUp with Essential Accounts”, participants gained a thorough overview of basic accounting structure via an engaging and informative presentation. By the end of the session, the participants were excited to prepare their own business account statements, which is vital to making informed decisions and driving sustainable growth in their businesses.



## FET Alumni Share their Industrial Experience

Mr. Yeoh Kian Hong, our Permata Dunia from the Faculty of Engineering and Technology (FET), conducted a talk on his career experience on 4 September 2023. Mr. Yeoh, an assistant sales manager at Hyundai Elevator, is a graduate of Mechanical Engineering (class of 2016). With 7 years of service in the employment of companies that provide heavy machinery, Mr. Yeoh returned to his alma mater for a short but useful stint to educate our soon-to-graduate students on the expectations of

working life. Mr. Yeoh began the session with a description of the installation, operation, and maintenance of elevators, as befitting his current job in the elevator and escalator industry. Specific topics that were broached include regulations on standardised functions of elevators, environmental, health, and safety (EHS) concerns regarding the use of elevators. He also talked about the costs and complications of installing elevators in buildings, as well as the limitations on the functions of elevators that depend on the type and size of the client’s building.

The audience included both newly enrolled diploma engineering students and final-year undergraduates, creating a diverse gathering. During the session, Mr. Avineswaran shared his extensive experience in the semiconductor industry and offered valuable insights into job applications after graduation. He encouraged engineering students to explore various career paths within the field before entering the workforce. His words resonated with the students, providing a fresh perspective on their engineering studies and the multitude of opportunities awaiting them.







## Nurturing Industry-Ready Graduates through Industrial Exploration

The Faculty of Business (FOB) organised an insightful industrial visit on 8 September 2023, to Ajinomoto (Malaysia) Berhad and Yakult Malaysia. The visit aimed to provide 32 students from the Diploma in Accounting, Diploma in Business Administration, and Diploma in Digital Business programmes with a practical understanding of industry practises. Accompanying the students were 4 academics.

During their visit to Ajinomoto (Malaysia) Berhad, students gained hands-on experience with the company’s core product packaging processes. Additionally, they actively participated in various company-organized activities, including a factory tour and a cooking demonstration.

At Yakult Malaysia, students were introduced to the entire production cycle, starting from fermentation and quality testing to bottling, packaging, and storage. They also had the opportunity to observe and learn about quality control procedures. This industrial visit provided students with a valuable opportunity to connect classroom knowledge with real-world applications. As a result, they eagerly anticipate future industrial visits to further enhance their practical understanding of various industries.



## Career Connect and Allianz Join Hands for Career Aspiration and Development Programme

In an effort to expose students to the career aspiration and development programme, Career Connect and Allianz joined hands to organise two programmes on campus. On 9 September 2023, a career programme titled ‘Allianz AweZome Discovery’ was held at the Cyberjaya campus. The event featured the



Allianz AweZome Discovery truck rolling up in style on campus to visit universities, bringing a series of activities and a panel of professionals to help the students navigate towards a successful career journey. From personality tests to eSport battles, the journey was filled with self-discovery and excitement, which aimed at empowering and providing the students and job seekers with the confidence for tomorrow as well as the skills needed to navigate the job-seeking journey.

Two days before this event, a total of 17 students attended a career workshop, “Slaying Your Interview,” at the EDC on 7 September 2023. The workshop was conducted by Mr. Kevin Low, University Partnership Specialist, Allianz Life Insurance Malaysia Sdn. Bhd. The students were exposed to how to leave a great first impression during the interview and how to tackle difficult interview questions.

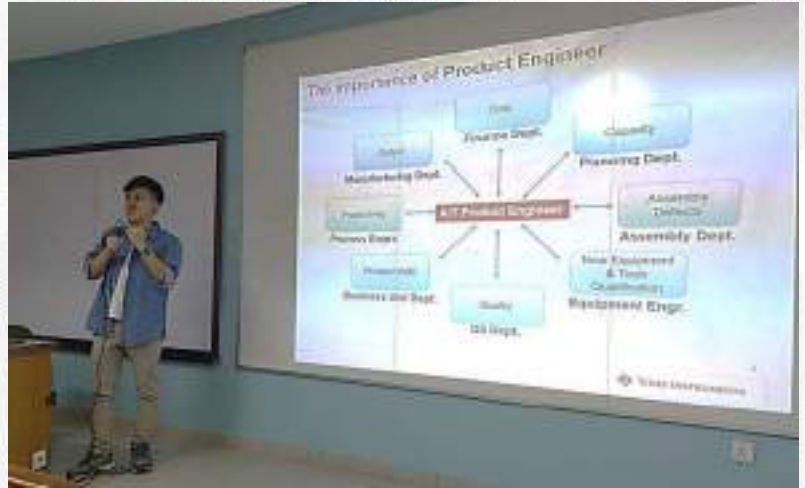
This event was a success as it helped the students prepare for their academic and career interviews. The speaker delivered an engaging and interactive session during the session. The students also learned more about the challenges before the interview and how to ace it. It is hoped that these events will provide insightful knowledge for the students.



## FET Alumnus Expounds on the Role of Product Engineer in the Semicon Industry

The Faculty of Engineering and Technology (FET) Alumni Committee organised a physical sharing session on 13 September 2023. The invited speaker was Mr. Chong Jor Shen, who is a FET alumnus who graduated with a Bachelor of Engineering (Hons.)

Electronics majoring in Robotics and Automation in 2019. Mr. Chong is currently working as the Senior Manufacturing Test Product Engineer in the A/T Product Engineering (ATPE) Department at Texas Instruments Electronics Malaysia (TIEM), Melaka.



Mr. Chong Jor Shen's sharing session was incredibly insightful and inspiring for the participants. His experience in the semiconductor manufacturing industry, coupled with his journey from being an alumnus to a Senior Manufacturing Test Product Engineer, provided insightful information to the current engineering student. His emphasis on skill development and ethical approach is crucial advice for any aspiring young engineering student. Furthermore, Mr. Chong's enthusiasm in responding to the students' questions shows his dedication to helping his fellow juniors be successful on the engineering pathway.

## Career Connect and Nala Groups Coact for A Professional Journey Session

A career programme titled "How to Get a Higher Salary" was jointly organised by Career Connect and Nala Groups on 14 September 2023, at the Melaka campus. The session was attended by 44 students from both campuses and was conducted by Ms. Winnie Chong, Senior Recruitment Consultant, Nala Groups.

The event served as an avenue for the students to negotiate their salaries as well as learn more about how to tackle difficult interview sessions. The event attendees

specific questions and feedback evaluation opportunities during the session.

The speaker emphasised that the level of professionalism must be upheld when they are in a difficult situation during the interview. The speaker also gave some advice to the students and reassured them that it is possible to ace the interview session with some practise and guidance.



## MMU Inks MoU to Promote Digital Entrepreneurship

Multimedia University (MMU) inked a Memorandum of Understanding (MoU) with Yayasan Diraja Sultan Mizan, Yayasan Telekom Malaysia (YTM), Universiti Malaysia Terengganu (UMT), and Universiti Sultan Zainal Abidin (UniSZA) in a ceremony held at the St. Regis Kuala Lumpur on 21 September



2023. The ceremony was graced by the presence of KDYMM Al-Wathiqu Billah Sultan Mizan Zainal Abidin Ibni Al-Marhum Sultan Mahmud Al-Muktafi Billah Shah, the Sultan of Terengganu, who witnessed the event. The MoU signatories were Dato’ Dr. Che Abd Rahim Nik, Member of the Board of Trustees of Yayasan Diraja Sultan Mizan; Dato’ Zainal Abidin Putih, Chairman of YTM; Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU; Prof. Dato’ Dr. Mazlan Abd Ghaffar, Vice Chancellor of UMT and Prof. Dato’ Dr. Fadzli Adam, Vice Chancellor of UniSZA. Representing MMU was Prof. Ir. Dr. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoint (VP MEET).

This cooperation was initiated through the “Siswazah Usahawan Digital Terengganu (SISDIT)” programme, coordinated by MMU Cnergy. This programme aims to guide final-year students who are interested in digital entrepreneurship. A total of 27 students from UNISZA and UMT participated in the programme, which was completed in 20 days.

The pact focuses on several areas, including improving digital entrepreneurship skills and knowledge among graduates so they can meet current needs and be a source of income; implementing a structured training programme to strengthen core competencies of entrepreneurship among graduates; assisting graduates in obtaining related funding assistance and grants for business needs; and monitoring and guiding graduates specifically to ensure the programme objectives are met.

## Industrial Exposure via Deloitte Career Talk 2023



A career talk was held by Deloitte representatives at the Melaka campus, recently. The session was conducted by four esteemed speakers, who are also MMU alumni, namely Mr. Lim Jen Jiu, Ms. How Shin Teng, Ms. Carolyn Chan, and Ms. Amenda Lee. Approximately 50 students enthusiastically participated in this programme, and the organisational responsibilities were efficiently overseen by a dedicated team comprising Ms. Gan Chin Yee, Dr. Yip Yen Yen, and Dr. Lim Ying Zhee.

The primary objectives for organising this event encompassed a three-fold approach. Firstly, it aimed to inspire and encourage students to participate in the Deloitte Tax Challenge. Secondly, it sought to familiarise students with the inner workings of the Deloitte Melaka office, providing valuable insights into its operations. Lastly, the event aimed to extend internship opportunities to the attending students, inviting them to become part of the Deloitte team.



## Acquiring Knowledge on Sustainable Investing

The Faculty of Business (FOB) and the Securities Commission Malaysia (SCM) jointly hosted an online seminar titled “Sustainable and Responsible Investing” on 21 September 2023. This webinar aimed to provide valuable insights into the realm of sustainable investing, with a particular emphasis on the Sustainable and Responsible Investment (SRI) initiatives implemented by the Securities Commission Malaysia.

In an era where the world is advancing towards sustainable development and confronting the challenges posed by climate change, this session sought to underscore the significance and consequences of sustainable investment practices. Moreover, it sheds light on the array of investment options available to retail investors who wish to align their investments with sustainable principles. Furthermore, the webinar also accentuated the critical importance of equipping individuals with the knowledge necessary to protect themselves from potential scams in the investment landscape. Notably, this collaborative event was organised by the Securities Commission Malaysia in partnership with the Faculty of Business (FOB) at MMU, as part of the curriculum for the course “Introduction to Investment.”



## Nurturing Resilient Student Entrepreneur with eCadet

Multimedia University (MMU) launched an initiative, Entrepreneur Cadetship or eCadet to produce a dynamic and resilient student entrepreneur on 17 October 2023 at the MMU Cinema, Cyberjaya campus. Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU graced the occasion of inaugurating the initiative during the event. In his speech, Prof. Dato’ Dr. Mazliham also appreciated the founders, industry leaders, and representatives for their continued support of MMU’s initiative.

The event was also attended by Datuk Salmah Hayati Ghazali, Entrepreneurship Advisor of MMU, Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development (VP SEED), and other invited guests. During the event, an MoU exchange ceremony with the partners and mentors was also held as well as the presentation of certificates of appreciation.

The eCadet programme offers students exposure to entrepreneurship culture and the business environment, allowing them to gain authentic experience in the business world. With the commitment of the eCadet partners and mentors supporting the growth of our students’ startups, this programme is sure to benefit our student entrepreneurs.



## Building an Exceptional Future: Highlights from CFA Society Malaysia’s Career Day

On 23 of September 2023, the Banking & Finance Department of the Faculty of Business (FOB) embarked on an enlightening journey to CFA Society Malaysia’s Career Day, which carried the theme “Build an Exceptional You!” This event was a revelation for 33 enthusiastic students, most of whom were eager to unravel the secrets to success in the finance world. The day was brimming with opportunities for students to connect, receive personalised career advice, and gain insight into how the prestigious CFA® charter has contributed to the career development goals of professionals from diverse backgrounds.

The highlight of the day was undoubtedly the chance to interact with seasoned career gurus who have navigated the finance landscape and risen to the pinnacles of success. These gurus shared their invaluable experiences and offered personalised guidance that resonated deeply with the aspiring finance professionals in the room. The stories were as diverse as the participants themselves, showcasing the universal applicability of the CFA® Programme. From investment bankers to portfolio managers, the Career Gurus hailed from various backgrounds and had one common thread—the CFA® charter. Their tales painted a vivid picture of how this globally



recognised qualification had been a catalyst for their career development. Throughout the day, participants engaged in thoughtful discussions and networked with peers who shared their ambitions. The camaraderie and enthusiasm in the room were palpable, fostering an environment where questions flowed freely and knowledge was exchanged generously.

As the event concluded, the resounding message was clear: the path to an exceptional career in finance lies in the pursuit of knowledge and the commitment to excellence. CFA Society Malaysia’s Career Day 2023 not only illuminated this path but also ignited a spark of motivation in every participant. It was a day when dreams met reality, and the journey towards an extraordinary career began in earnest. In retrospect, our visit to CFA Society Malaysia’s Career Day 2023 was more than an

event; it was a transformative experience that left a lasting impression on all who attended. The knowledge gained, the connections forged, and the inspiration received were invaluable assets on the journey to building an exceptional future in the world of finance.





In the Youth Entrepreneurship Challenge (YEC) 2023 Open Category, a team of MMU students, The Changemaker Academy, won the champion title, and walked away with a cash prize of RM10,000. The team, consisting of Kalsum Preeti Abdul Rahim Suren from the Faculty of Management (FOM), Bryan Yeap from the Faculty of Computing and Informatics (FCI), Reyshinder A/L Ramish from the Faculty of Creative Multimedia (FCM), Nabil Faris Ubaidi Hamimudin (FCM), and Muhamad Amirul Iqwan Norhazmi (FCM), represented the university for this competition. Mentored by Mr. Vincent Chan from the Faculty of Business (FOB), the team impressed the judges with their strategic and innovative pitch. The YEC 2023 aimed to provide an avenue for young entrepreneurs aged 17 to 35 in Penang to present their business ideas.

## MMU Team Earns Top Honours at Youth Entrepreneurship Challenge 2023



The winning concept, SHARIN, is a virtual marketplace designed to offer a more engaging platform for SMEs and foster secure interactions between merchants and customers. Additionally, the team's impressive performance in the competition attracted the attention of potential investors, ensuring the continued growth of SHARIN. The final round of this competition was officiated by YB Gooi Zi Sen, the Penang State Exco for Youth, Sports and Health, accompanied Dr Sai Ling Gwee. The victory of MMU team in the YEC 2023 showcases the potential of young entrepreneurs in Penang and underlines the importance of innovation in business solutions.

## EDC Empowers Young Entrepreneurs with Digital Marketing

A total of 30 enthusiastic students from Multimedia University (MMU) partook in an invigorating training session titled "Fundamentals of Digital Marketing" on 4 November 2023. Hosted by the Entrepreneurship Development Centre (EDC), the session was conducted by Mr. Hanif Marzuki Mohd Saupi, the Founder and Chief Executive Officer of Youth Venture Asia.



The session, which is one of the eCadet activities, was also attended by Mr. Albert Quek, Deputy Director of Alumni Engagement, Career, and Entrepreneurship Development (ACE), and EDC officials. This training marks another significant step in MMU's commitment to nurturing young entrepreneurial talents, equipping them with essential knowledge and skills to kickstart their entrepreneurial journey. More exciting programmes are being curated to groom resilient and dynamic young entrepreneurs.

## FIST Alumnus Shares His Insights on Work Culture of the IT Industry

The Faculty of Information Science and Technology (FIST) hosted an alumni sharing session entitled “Journey from Intern to Manager at FIST Smart Lab, recently. The speaker, Mr. Murali Krishna Narayanasamy who was an alumni of the Diploma in Information Technology as well as Bachelor of Information Technology (Hons) Information Technology Management offered valuable insights into the work culture and expectations of the IT industry, along with interview tips for recruiting IT graduates. Approximately 40 students



participated in this sharing session, and the organising committee was composed of a dedicated team comprising Ms. Lim Liyen, Mr. Noor Hisham Kamis, Mr. Muhammad Loqman bin Samat, Ms. Rashidah Ahmad, Ms. Farah Izzati binti Yusoff, Ms. Tan Sin Yin and Ms. Yap Hui Yen.

The first objective of the sharing session is to share valuable interview tips for hiring IT interns and recent IT graduates. Secondly, the sharing session also aimed to familiarize participants with the work environment and expectations within the IT industry. During the sharing session, students enthusiastically interacted with the speaker, eagerly asking questions about the role of an IT manager and the expectation to work in the IT industry. All in all, the students obtained an insightful experience and engagement with the alumni speaker during the session.



Career Connect Centre successfully organised its Career Connection on 7 and 8 November 2023 at the Melaka and Cyberjaya campuses, respectively. A total of 19 companies participated in this mini career fair including Hartalega, Auraplex, Genting Plantations Berhad, Cheng & Co Group, A' Famosa Resort & Hotel, Jobstreet and others.

## Career Connection Provides Firsthand Knowledge & Career Opportunities

This event helped our students explore career opportunities and internship placements with the companies involved. The students also grabbed this opportunity to meet and talk with the recruiters during the event.

This programme allowed the employers to recognise the best talents, while the students would be able to learn more about corporate information and other matters related to their career pathway.



## FYTP Equips Students with Essential Skills and Industry Exposure

On 9 November 2023, a group of 25 students from various faculties partook in a two-day event, the Future Young Talent Programme (FYTP) at the Learning Point, Cyberjaya campus. Jointly organised by Career Connect Centre, Career Express Club (C3), and InvestKL, the first day of the event featured renowned speakers namely



Mr. Fabian Fidelis, Managing Director, and Master Trainer of ProActive Training Sdn Bhd, Ms. Tracy Yong, Training Specialist with ProActive Training Sdn Bhd and Ms. Marie Tseng from Cultural Impact. Datuk Muhammad Azmi Zulkifli, the Chief Executive Officer (CEO) also graced the event with his presence and shared some industry insights and introduction to MITI and InvestKL. Datuk Muhammad also elaborated on some key competencies that graduates should acquire to join the workforce in Multinational Companies (MNC). The students also made an industrial visit to the MNC, Air Liquide Business Services Sdn Bhd in Petaling Jaya and SRKay Consulting Group in Bangsar during the second day. This company visit allows the students to receive insightful perspectives and knowledge from the industrial players. They also actively engaged in the Q&A session.

FYTP aims to equip future university graduates with essential skills that will positively impact the workplace. These skills include cultural diversity, teamwork and collaboration, effective communication, and self-awareness. All in all, the students gained industry exposure and prepared them for job interviews and a real working environment.

A total of 54 students from the next phase of their Faculty of Engineering and Technology (FET) attended a virtual industrial talk titled "Semiconductor Industry Career Path" on 16 November 2023. Organised by the Industrial Linkage Committee (ILC)

of the faculty, the talk session was conducted by Mr Chee Howe Shien, Test Sourcing Manager, Texas Instruments Dallas. He graduated in the class of 2005 with a degree in Electronics Engineering, majoring in Computer.

During the session, students gained exposure to various career paths within the semiconductor industry, along with important lessons aimed at benefiting those embarking on the

He highlighted his journey from landing his first job as a product/test engineer with Texas Instruments Malaysia to his current role, leading the TI corporate sourcing strategy for probe and final test operations at Texas Instruments Dallas. Overall, the organiser would like to thank Mr. Chee Howe Shien for sharing his time and expertise, and it is hoped that this session has enriched our students' understanding of the semiconductor industry.

## Obtaining Insights on Semiconductor Industry Career Path





## MMU Participates in JKIRD 2023 to Discuss on Graduate Employability (GE)

Multimedia University (MMU) was invited to participate in the JPT-KPT-Industry Roundtable Discussion Series 2023 (JKIRD 2023) held on 14 November 2023 at Putrajaya International Convention Center (PICC). Prof. Ir. Dr. Hairul Azhar Abdul Rashid, Vice President Market Exploration Engagement and



Touchpoint (MEET) represented the university during the event. This roundtable session was also participated by universities in the central zone of West Malaysia including Universiti Malaya (UM), Universiti Kebangsaan Malaysia (UKM), International Islamic University Malaysia (IIUM), Universiti Putra Malaysia (UPM), Universiti Teknologi MARA (UiTM) and Universiti Pertahanan Nasional Malaysia (UPNM).

The JKIRD served as an avenue for industry representatives and universities to discuss issues and matters related to Graduate Employability (GE). Among concerns that were addressed were talent mismatch, graduate pay rate, contract vs permanent employment terms and GIG Economy. MMU together with ZTE Malaysia, Dell Malaysia and Microsoft Malaysia exchanged views on the conducive employment ecosystems for future graduates and potential employees at the industry level. The feedback between industry players and universities is vital as both play a significant role in nurturing the future workforce for the nation.

The Faculty of Engineering and Technology (FET) organised a sharing session featuring one of the FET's alumni, Mr. Alexander Oh Ting Wei on 24 November 2023. Graduated with a Bachelor in Engineering (Hons.) Mechanical in 2018. With 5 years of service in the employment of companies that provide consultancy on industrial management, he has returned to his alma mater to share his personal career journey in engineering to his fellow juniors. Mr. Alexander Oh described his job portfolio, such as the certifications that he has earned for skills that include quality management. He also mentioned the complications that he had after graduation, such as the

search for jobs. It was during this time that he learned to diversify his skills, eventually founding a consultancy company that focuses on human capital.

In the session, Mr. Alexander also shared on how a graduate can look for companies that are looking for fresh talent, as well as organisations that also provide on-the-job training. He mentioned the importance of networking and people connections that he had gained during his university years contributed to the direction and development of his career. Finally, he encouraged the engineering graduates on building resilience against failures and criticisms.

## FET Alumnus Shares on His Career Journey in Engineering





## FOM & Internet Alliance Malaysia Join Hands for iCadet Mini Fair

The Faculty of Management (FOM) hosted a “Mini iCadet Career Fair” in collaboration with Internet Alliance Malaysia on 24 November 2023 at the Cyberjaya campus. Dr. Abdullah Al Mamun Sarwar, Deputy Dean of Student Experience and Alumni, and Ms. Yap Yee Yann, iCadet Coordinator for FOM, extended a warm welcome to esteemed guests on behalf of the faculty.

The event commenced with a welcome address from Prof Dr. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoint (MEET), followed by a speech from Dr. Sunny Ooi, President of Internet Alliance Malaysia. A total of 17 companies actively participated in the career fair.

Internet Alliance Malaysia and its member companies took the opportunity to introduce iCadet programs to FOM students.

Recognising the pivotal role career fairs play in professional development and job-seeking processes for both employers and job seekers, a panel discussion on “How to be relevant in the current industry?” was also held

during the event. Industry experts elaborated on the significance of graduating as industry-ready professionals for the benefit of the students.

FOM’s organisation of this event proved to be a transformative experience for both students and employers.



## FET Alumni Sharing Session Connects Students to Workforce

Mr. Abdelsalam Hamdi Abdelsalam Abdelaziz, our Permata Dunia from the Faculty of Engineering & Technology (FET) delivered a virtual sharing session on 23 November 2023. Mr. Abdel graduated with a Bachelor of Engineering (Hons.)

Electronics majoring in Telecommunication (2019) and a Master in Engineering Science (2021). He is currently attached to iRadar Sdn. Bhd as an engineer.

Through this one-hour session, the speaker shared his personal experiences and useful tips on becoming an engineer. The participants gave valuable feedback as they found the session relevant and informative in preparing themselves better to understand the working life of an engineer.



### **Exclusive Sharing Session by ICAEW Representative**

A group of second year Diploma in Accounting students attended an exclusive sharing session by Mr. Ming Hsiang Lim, a distinguished representative from the Institute of Chartered Accountants in England and Wales (ICAEW) on 28 November 2023 at the Melaka campus.

The sharing session delved into a myriad of topics, ranging from emerging trends in global accounting standards to the importance of ethical considerations in financial decision-making. Students were provided with a chance to engage in an interactive video and dialogue with Mr. Hsiang, allowing them to pose questions and seek advice on navigating the complexities of a career in accounting.

The organiser expressed gratitude for Mr. Hsiang's willingness to share his wealth of knowledge, citing the session as a significant enhancement to the academic curriculum

The event not only enriched students' theoretical understanding but also offered practical insights that will undoubtedly contribute to their professional development.

As the session concluded, students were inspired and motivated to pursue excellence in their academic and future accounting professional endeavors. The event stands as a testament to the faculty's commitment to providing students with access to industry experts, fostering an environment where theoretical learning is complemented by real-world insights.





## MMU Team Named a Finalist & Brings Home RM2,000 at UTC 2.0 Programme

A group of passionate young entrepreneurs, Bites of Change from the Multimedia University (MMU) was successfully named as one of Top 10 finalists in the University to Community (UTC 2.0) programme on 16 December 2023. The team comprised of Suaina Tan Su Ying binti Akid Arman Tan from the Faculty of Management (FOM), Teng Yung Kin (FOM), Dayang Mia Khazrin Binti Ahmad Rizal Yaman from the Faculty of Applied Communication (FAC) and Berady Chua Chen Wee (FOM) also walked away with a cash prize of RM2,000. The programme, which was jointly organised by Universiti Pendidikan Sultan Idris (UPSI) and PKT Logistics Group Sdn Bhd, aimed to nurture and support the entrepreneurial spirit among students.



The participants experienced the pitching Bootcamp Phase 3 at the Ship Campus, Batu Kawan in Penang. The provision of free bootcamps, training, mentoring sessions, product creation, and upskilling workshops not only equips the participants with essential skills but also contributes to creating meaningful change within the community. Guided by Ms. Putri Syaidatul Akma Mohd Adzmi, Deputy Director of Alumni

Engagement, Career and Entrepreneurship Development (ACE), the Bites of Change team received RM2,000 to enhance the business and they also received the additional top-up sponsorship from PKT Logistics during the first phase of the programme, further demonstrates the recognition and support for their promising venture.



# PUTRA BRAND AWARDS

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## INDUSTRY, INNOVATION AND INFRASTRUCTURE

**“Aims to build resilient infrastructure, promote sustainable industrialization and foster innovation.”**

*Given its focus on Information and Communication Technology (ICT), a specialised domain, MMU has been a keen observer of the rapid evolution across various industries. Recognising that sustained progress hinges on innovation, the university fosters a culture of creativity and forward thinking. Encouraging both students and staff to embrace innovation, MMU instils a mindset geared towards continual improvement and the exploration of novel approaches to problem-solving.*

## MMU & IFERP Co-Organise International Conference

Multimedia University (MMU) and Institute for Engineering Research and Publication (IFERP), India joined hands in organising the 42nd World Conference on Applied Science, Engineering and Technology (WCASET) 2022, recently. Prof. Dr. Mardeni Roslee, Deputy Director of the Research Management Centre (RMC) and the Chair of Centre for Wireless Technology of the Faculty of Engineering (FOE) delivered his introductory remarks as the General Chair of the conference.

Prof. Hezerul Abdul Karim, Deputy Dean of FOE graced the event by officiating the opening ceremony together with the presence of Mr. Rudra Bhanu Satpathy, Chief Executive Officer (CEO) of IFERP, which was moderated by Assoc. Prof. Dr. Pang Wai Leong, conference chair. With its theme entitled “Discover the Difference and

Exceeding the Vision in Applied Science, Engineering & Technology Research Studies”, the conference gathered a total of 150 papers submitted from the United Kingdom, Italy, France, Greece, Ukraine, Germany, Denmark, and many more.

The conference has significantly added value to the further research of Applied Science, Engineering & Technology and enables the scientists and researchers to be exposed to the latest development and advancement. In September 2022, a Memorandum of Understanding (MoU) was virtually signed between MMU and IFERP. This conference was one of the collaborative efforts and more activities will be implemented in the future.





## MMU and Finworld Technology Sdn Bhd Sign Pact for Academic and Research Development

On 7 February 2023, Multimedia University (MMU) formalised its partnership with Finworld Technology Sdn Bhd through a Memorandum of Agreement (MoA) signing ceremony at the Cyberjaya campus. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Mr. Simon Liau Hien Shin, Chief Executive Officer (CEO) of Finworld Technology Sdn Bhd.

The event also witnessed a book launching entitled 'Finworld Saham – Biar Duit Bekerja Untuk Anda', which was co-written by Mr. Simon and Dr. Ridzwan Bakar, our academic staff from the Faculty of Management (FOM). On top of that, Mr. Simon also presented a Consultancy and Research Grant worth RM30,000 to Dr. Mohd Fairuz Abdul Rahim, Dean of FOM. Several students obtained laptop assistance which was supported by Finworld Technology during the event. The guests also had the opportunity to visit Finworld Lab at the FOM building. It is hoped that more collaborative effort and engagement could be implemented for the benefit of both parties.



## 3 Varsities Jointly Organise International Research Colloquium

Multimedia University (MMU), La Rochelle University (LRU), France and Universiti Kuala Lumpur (UniKL) worked hand in hand in organising the International Research Colloquium from 8 March until 9 March 2023. The colloquium served as an avenue for the researchers to exchange their views and collaborate for new ideas and knowledge. The event also promotes joint research projects and showcases the existing projects between participating universities.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU met the representatives from LRU and UniKL, and congratulated the participants during the last day of the colloquium. The closing ceremony on this last day was officiated by Dr. Valérie Barbosa, the attachée for science and higher education from the embassy of France to Malaysia. Also present were Assoc. Prof. Ts. Dr. Junaidi Abdullah, Dean of Faculty of Computing and Informatics (FCI); Assoc. Prof. Dr. Chua Fang Fang, Ts. Dr. Ng Kok Why, Ts. Dr. Noramiza Hashim and other MMU staff.





## FOB Students Win Silver and Bronze Awards at RIPC 2023

Kuiek Xing An, Janice Anne Sivasothey, and Nurul Aida Harun from the Faculty of Business (FOB) had achieved outstanding result in the Final Year Project & Postgraduate: Research & Innovation Poster Competition (RIPC) 2023. These students, who were guided by Dr. Yeo Sook Fern, won 2 Silver Awards and 1 Bronze Award for their exceptional research projects.

Kuiek Xing An, a BBA (Hons.) Marketing Management student was awarded the Silver Award under the Degree Final Year Project Social Sciences and Humanities category. Janice Anne Sivasothey, an MPhil student, received the Silver Award for the Master Social Sciences and Humanities category, under the supervision of Dr. Yeo and Adjunct Co-Supervisor, Assoc. Prof. Dr. Tan Cheng Ling from Universiti Sains Malaysia (USM). Meanwhile, Nurul Aida Harun, a PhD student, secured the Bronze

Award under the PhD Social Sciences and Humanities category, with supervision from Dr. Yeo and Dr. Suganthi Ramasamy.

The winners were presented with certificates of achievement at the competition, which was organized by the MNNF Network. This platform provided an opportunity for 174 students from Malaysia, Indonesia, Yemen, and South Africa to showcase their FYP projects or theses (dissertations). The competition serves to encourage research and innovation among students.





## MMU Wins 22 Medals at MTE 2023



MMU took home 22 medals at the 22nd Malaysia Technology Expo (MTE) 2023 which was held in hybrid mode from 16th until 18th March 2023. The MTE-IIA 2023 received approximately 508 submissions, across public, and private universities, research institutions, and centres from 18 countries.

Our researchers grabbed 2 Outstanding Awards, 1 Special Award, 5 Gold Awards, 8 Silver Awards, and 6 Bronze Awards during the event. The following is a list of medal winners from MMU:

No	Award	Project	Project Leader & Team Members	Faculty
1	Outstanding Award	Mobile Application for Retinal Image Analysis	Dr. Aziah Ali, Mubdiul Hossain, Aziah Ali, Noramiza Hashim, Wan Noorshahida Mohd Isa, Zarina Che Embi, Shahbe Mat Desa, Junaidi Abdullah	FCI
2	Outstanding Award	Teru Teru	Mr. Vincent Chan, Lim Min Ying, Ng Jin Yang, Jeffrey Quek Shue Yew, Teh Ghee Ang	FOB
3	Special Award	Wallet And Handbag-Fit Malaysian Banknotes Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit, Mr. Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET

No	Award	Project	Project Leader & Team Members	Faculty
4	Gold	Efficient Spectrum Utilization System For Facilitating Velocity Based 5G Network	Prof. Dr. Mardeni Bin Roslee, Abdullah H. Al-quhali, Mohamad Yusoff Alias, Khairil Anuar, Shazrulnizam Huzairi Md Hashim	FOE
5	Gold	Throughput And Fairness Trade-Off System For 5G Seamless Connections	Prof. Dr. Mardeni Bin Roslee, Osama Abu Ajwa, Zubaida Yusoff, Khairil Anuar, Shazrulnizam Huzairi Md Hashim	FOE
6	Gold	Teru Teru	Mr. Vincent Chan, Lim Min Ying, Ng Jin Yang, Jeffrey Quek Shue Yew, Teh Ghee Ang	FOB
7	Gold	Vehicle Safe Lane Changing Pre-Warning Tool	Ts. Dr. Sumendra A/L Yogarayan, Kwang Chee Seng, Ts. Dr. Sumendra Yogarayan, Ts. Mohd. Fikri Azli Abdullah	FIST
8	Gold	Mobile Application for Retinal Image Analysis	Dr. Aziah Ali, Mubdiul Hossain, Aziah Ali, Noramiza Hashim, Wan Noorshahida Mohd Isa, Zarina Che Embi, Shahbe Mat Desa, Junaidi Abdullah	FCI
9	Silver	HRV-Lite: An IoT on Wheels Device To Monitor Driver's Physiological State	Ts. Dr. Siti Fatimah Binti Abdul Razak, Bryan Hii Ben Bin, Sumendra Yogarayan, Sharifah Noor Masidayu Sayed Ismail, Mohd Fikri Azli Abdullah, Ong Chia Sui, Nazrul Muhaimin Ahmad	FIST



No	Award	Project	Project Leader & Team Members	Faculty
10	Silver	ECluck	Mr. Vincent Chan, Lim Min Ying, Neha Bhubhinder Singh, Law Jolyn, Christine Choo Wan Teng, Jovita Ooi Sue Anne, Cheryl Chan	FOB
11	Silver	Telehealth For Sustainable Wellness	Dr. Ong Lee Yeng, Dr. Leow Meng Chew, Chung Jen Li, Chua Jiaming	FIST
12	Silver	Digital Signage Augmented Roadshow (DISAR)	Dr. Leow Meng Chew, Dr. Ong Lee Yeng, Ng Jian Wei, Tan Yi Fan, Lim Zhou Yi, Leow Kang Ren, Loo Eng Keong, Low Chuan Chuan	FIST
13	Silver	Wallet And Handbag-Fit Malaysian Banknotes Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit, Mr. Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET
14	Silver	Handheld Radiation Survey Meter with Extendable Fiber Optic Probe	Ir. Prof. Dr. Hairul Azhar Abdul Rashid, Md Zubair Hassan Tarif, Dr. Adebiyi Oresegun, Azmi Basaif, Dr. Siti Azlida Ibrahim, Dr. Sarina Mansor, Prof. Dr. David Andrew Bradley, Sayuti Jamaudin, Khairina Mohammad Diah	FOE
15	Silver	Eco Smart Anchovies Cleaning Machine	Dr. Cham Chin Leei, Assoc. Prof. Dr. Ooi Shih Yin, Prof. Zulfadzli Yusoff, Assoc. Prof. Dr. Tan Ai Hui, Assoc. Prof. Dr. Ooi Chee Pun, Dr. Tan Wooi Haw, Dr. Tan Yi Fei, Prof. Hezerul, Gan Ming Tao, Kwan Wei Peng	FOE
16	Silver	Milk Siblings Tracing System	Ts. Dr. Siti Fatimah Binti Abdul Razak, Bryan Hii Ben Bin, Nur Llyana Rosli, Noor Hisham Kamis, Mohd Fikri Azli Abdullah	FIST
17	Bronze	SHARIN – One-Stop Immersive Gamified Virtual Marketplace	Mr. Vincent Chan, Nyaanaputhraan A/L Prabakaran , Reyshinder Ramish, Kalsum Preeti	FOB

No	Award	Project	Project Leader & Team Members	Faculty
18	Bronze	Space Object Recognition Using Deep Learning Methods for Space Situational Awareness	Ir. Prof. Dr. Hezerul Abdul Karim, Dr. Nouar AIDahoul	FOE
19	Bronze	Localization And Classification of Parasitic Egg Using EfficientDet Detector in Microscopic Images	Ir. Prof. Dr. Hezerul Abdul Karim, Dr. Nouar AIDahoul	FOE
20	Bronze	The Conceptual Testbed of Quality-Of-Service Support In Vehicular Adhoc Networks	Ts. Dr. Sumendra A/L Yogarayan, Ts. Dr. Siti Fatimah Abdul Razak, Assoc. Prof. Ts. Dr. Afizan Azman and Ts. Mohd. Fikri Azli Abdullah	FIST
21	Bronze	TutorKay@Home	Ms Anushia Chelvarayan, Dr. Yeo Sook Fern, Dr. Lim Kah Boon	FOB
22	Bronze	Owl Invest	Mr. Vincent Chan, Nyaanaputhraan A/L Prabakaran, Reyshinder Ramish, Kalsum Preeti	FOB



## MMU and Infinecs Strengthen Collaboration and Partnership

On 4 April 2023, the Faculty of Engineering (FOE) received a visit from Mr Kalai Selvan, the Chief Executive Officer (CEO) of Infinecs Systems Sdn Bhd together with his team from Penang at the Cyberjaya campus. The Infinecs team participated in the iCadet programme that was held on the same day on campus. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU extended his warm welcome to the Infinecs team together with Associate Professor Dr. Ooi Chee Pun, Dean of FOE. A few days earlier,



Infinecs signed a Memorandum of Understanding (MoU) with MMU, particularly FOE to provide strong support in programmes like iCadet, industrial training, and Final Year Project (FYP) topics. Infinecs emphasises its interest to establish joint research projects with MMU. The model of collaboration could be Master and PhD student sponsorship, with research topics in Analog Mixed Signal and RISC-V.

Infinecs is a Penang-based electronic design service company with a global presence founded and led by industry veterans. Infinecs is one of the region's leading electronics design services companies, providing value-added design development services in integrated circuit/semiconductor design, embedded systems design, and embedded software development. Infinecs is the partner of choice to the leading players from Fortune Global 500 companies. Infinecs supports their advanced System on Chip development utilizing industry advanced process technology nodes including cutting-edge sub-10 nm finFET technology i.e., 5nm and 3nm.

## MMU Student Clinches "Best Paper Award" at ISCBE 2023

Mr. Mohammad Imtiaz Hossain, a PhD fellow and Graduate Research Assistant (GRA) from the Faculty of Management (FOM) clinched the "Best Paper Award" at the 6th International Scientific Conference on Business and Economics (ISCBE 2023) on 12 May 2023. The paper titled "Ethical Leadership, Green HRM Practices and Environmental Performance of Manufacturing SMEs at Selangor, Malaysia: Moderating Role of Green Technology Adoption". The paper was co-authored by Dr. Teh Boon Heng, AP Dr. Magiswary Dorasamy, Dr. Mosab Tabash, and Prof Dr. Tze San Ong. The conference was organised by the faculty of business

and Economics of the South East European University, Tetovo, North Macedonia. There were more than 100 scientific papers presented from 25 different countries.

The event also featured keynote speakers were well-known international experts namely Professor Léo-Paul Dana from ICD Business School of Paris, Groupe IGS, France; Dr. Leon Eisen is an inventor and serial entrepreneur, venture partner at GSD Venture Studios, GVI Ventures, and Network VC and Dr. Andrea Caputo is Associate Professor in Management at the University of Trento, Italy, and at the University of Lincoln, United Kingdom.



## MMU Clinches 11 Gold Awards and 9 Silver Awards at ITEX 2023



Multimedia University (MMU) clinched 20 medals at the 34th International Invention, Innovation and Technology Exhibition 2023 (ITEX 2023), which was held from 11-13 May 2023. The ITEX 2023 received over 700 inventions from 19 countries and regions. Our researchers grabbed 11 Gold Awards, and 9 Silver Awards during the event.

The following is a list of medal winners from MMU:

No	Award	Project	Project Leader & Team Members	Faculty
1	Gold	Intelligent Bean De-Skinning Machine	Dr. Cham Chin Leei, Assoc. Prof. Ts. Dr. Ooi Shih Yin, Prof. Zulfadzli Yusoff, Prof. Tan Ai Hui, Gan Ming Tao, Prof. Ting Choo Yee, Assoc. Prof. Dr. Ooi Chee Pun, Assoc. Prof. Dr. Tan Yi Fei, Dr. Tan Wooi Haw, Quek Albert, Kwan Wei Peng, Prof. Hairul Azhar	FOE
2	Gold	A Solar-Powered Autonomous Lawnmower for Unlevelled Grassland	Assoc. Prof. Ir. Ts. Dr. Ng Poh Kiat, Kang Chun Quan, Dr. Liew Kia Wai, Elwin Nesan A/L Selvanesan	FET
3	Gold	Wallet And Handbag-Fit Malaysian Banknotes Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit, Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET
4	Gold	Surround Sensing-Based Water Wave Detector for Buoy	Prof. Dr. Lim Way Soong, Dr. Yeo Boon Chin, Lim Zhi Hao, Lui Poh Wei, Lai Yan Feng	FET



No	Award	Project	Project Leader & Team Members	Faculty
5	Gold	Mobile Application for Retinal Image Analysis	Dr. Aziah Ali, Mohammad Mubdiul Hossain, Ts. Dr. Noramiza Hashim, Ts. Dr. Wan Noorshahida Mohd Isa, Ts. Dr. Zarina Che Embi, Shahbe Mat Desa, Assoc. Prof. Ts. Dr. Junaidi Abdullah	FCI
6	Gold	Landslide Area Prediction using Machine Learning and Unmanned Aerial Vehicle (UAV) Imaging	Assoc. Prof. Ts. Dr. Ooi Shih Yin, Gs. Dr. Sheriza Mohd Razali, Assoc. Prof. Ts. Dr. Pang Ying Han, Gs. Assoc. Prof. Dr. Norizah Kamaruddin, Dr. Siti Nurhuidayu Abu Bakar, Prof. Dr. Hazandy Abdul Hamid, Chew Yee Jian, Dr. Lim Zheng You, Dr. Cham Chin Leei, Ts. Dr. Chong Siew Chin	FIST
7	Gold	Vehicle Safe Lane Changing Pre-Warning Tool	Ts. Dr. Sumendra A/L Yogarayan, Ts. Dr. Siti Fatimah binti Abdul Razak, Kwang Chee Seng	FIST
8	Gold	An Optimized Routing Protocols of Differentiated Services for Vehicular Testbed	Ts. Dr. Sumendra Yogarayan, Ts. Dr. Siti Fatimah binti Abdul Razak, Assoc. Prof. Ts. Dr. Afizan bin Azman, Ts. Mohd. Fikri Azli bin Abdullah	FIST
9	Gold	HRV-Lite: An IoT on Wheels Device to Monitor Driver's Physiological State	Ts. Dr. Siti Fatimah Binti Abdul Razak, Ts. Dr. Sumendra Yogarayan, Bryan Hii Ben Bin, Sharifah Noor Masidayu binti Sayed Ismail, Ts. Mohd Fikri Azli bin Abdullah, Ong Chia Sui, Ts. Dr. Nazrul Muhaimin bin Ahmad	FIST
10	Gold	eCluck	Mr. Vincent Chan, Lim Min Ying, Law Jolyn, Neha Bhubhinder Singh, Christine Choo Wan Teng	FOB
11	Gold	TutorKAY@Home	Anushia Chelvarayan, Dr. Yeo Sook Fern, Dr. Lim Kah Boon	FOB
12	Silver	Handheld Radiation Survey Meter with Extendable Fiber Optic Probe	Prof. Ir. Dr. Hairul Azhar Abdul Rashid, Md Zubair Hassan Tarif, Khairina Mohammad Diah, Dr. Adebiyi Oresgun, Azmi Basaif, Dr. Siti Azlida Ibrahim, Dr. Sarina Mansor, Jasmi Othman, Mohd Rinady Rifiat, Mohammad Firdaus Hamidi, Amer Ezzadeen Ahmad Nazri, Sajarathuldar Satibi, Hanafi Abu Bakar Al Haj, Sayuti Jamaudin, Prof. Dr. David Andrew Bradley	FOE



No	Award	Project	Project Leader & Team Members	Faculty
13	Silver	Smart 5G Internet of Things Agriculture Precision Monitoring System	Prof. Mardeni Roslee, Khairil Anuar, Yasir Ullah, Dr. Pang Wai Leong, Dr. Indrarini Dyah Irawati, Denny Darlis, Harikrishna K.	FOE
14	Silver	HETNETS 4G/5G System for Better Coverage and Speed	Prof. Mardeni Roslee, Aziz Ur Rehman, Dr. Tiang Jun Jiat, Khairil Anuar, Sufian Mousa Ibrahim Mitani	FOE
15	Silver	Design and Development of An Efficient AI-Based Seizure Detection System using EEG Signals	Assoc. Prof. Ts. Dr. Pang Ying Han, Dr. Lim Zheng You, Assoc. Prof. Ts. Dr. Ooi Shih Yin, Chew Yee Jian	
16	Silver	Milk Siblings Tracing System	Ts. Dr. Siti Fatimah Binti Abdul Razak, Ts. Noor Hisham bin Kamis, Bryan Hii Ben Bin, Nur Liyana binti Rosli, Ts. Mohd Fikri Azli bin Abdullah	FIST
17	Silver	Model for Frugal Innovation Through Intellectual Capital and IT Capability to Build an IR4.0 Education Ecosystem	Assoc. Prof. Ts. Dr. Magiswary Dorasamy, Jayamalathi Jayabalan, Prof. Ts. Dr. Murali Raman, Dr. Melissa Wendy Migin	FOM
18	Silver	SHARIN – One-Stop Immersive Gamified Virtual Marketplace	Mr. Vincent Chan, Reyshinder Ramish, Kalsum Preeti, Nabil Faris Ubaidi, Muhamad Amirul Iqwan	FOB
19	Silver	Owl Invest	Mr. Vincent Chan, Nyaanaputhraan Prabakaran, Shatiswaran Vigian	FOB
20	Silver	Teru Teru	Mr. Vincent Chan, Lim Min Ying, Teh Ghee Ang, Jeffrey Quek Shue Yew, Ng Jin Yang	FOB



## MMU and UTS Forge Closer Ties for Academic and Research Development



Multimedia University (MMU) and University of Technology Sarawak (UTS) have forged closer ties via a Memorandum of Understanding (MoU) signing ceremony on 30 May 2023. The MoU document was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Prof. Datuk Dr. Khairuddin Ab. Hamid, President of UTS. The ceremony was witnessed by Yang Berhormat Datuk Dr. Haji Annuar Rapae, Deputy Minister of Education, Innovation and Talent Development I.

Under this pact, both institutions will work together for the implementation of academic and research development. Among other cooperative engagements that could be conducted such as exchange programme, joint research, and matching grant. Yayasan Telekom Malaysia (YTM) also handed over 10 laptops to deserving students for their social impact programme during the ceremony.

## MMU, Sethu Institute of Technology Ink Pact to Renew Collaboration

Multimedia University (MMU) and Sethu Institute of Technology signed a Memorandum of Understanding (MoU) to renew the long-standing partnership between both institutions at the Cyberjaya campus on 12 June 2023. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and MR. S. M Seeni Mohamed Aliar Maraikkayar, Joint Chief Executive Officer of Sethu Institute of Technology.

Back in 2019, the collaboration between both institutions was initiated and the relationship would be strengthened through several activities and engagements including exchange programmes, joint research and publication, and matching grant.



## FOB Lecturer Bags Gold Medal at iTaLIIC 2023

Dr. Yuen Yee Yen, our lecturer from the Faculty of Business (FOB) for won the Gold Medal at the esteemed International Teaching and Learning Invention Innovation Competition (iTaLIIC 2023), Organised by the Center for Flexible Learning at Universiti Teknologi MARA, the event gathered participants from both local and international institutions,



including students, academicians, and professionals to showcase innovative teaching and learning methods. Over 200 participants were eager to display their creativity and inventiveness in the realm of education this year. The competition was evaluated by distinguished juries with extensive backgrounds in innovation, commercialisation, and research. The event served as a catalyst for advancing educational practices by recognising and promoting groundbreaking ideas and approaches.

Dr. Yuen, alongside his team members, Dr. Wendy Teoh Ming Yen from Universiti Teknikal Malaysia Melaka (UTeM) and Prof. Dr. Chong Siong Choy from Taylor’s University, earned the achievement for their exceptional demonstration of the Game-V mode. This innovative experiential and technology-enabled learning approach effectively enhances students’ creativity, critical thinking, communication, collaboration, and computational thinking skills – the renowned 5Cs in a university setting.

## Academic Staff and Students Acquire Knowledge of Ethnography Research Design

As part of the initiative to enhance academician’s knowledge of research-related matters, the Centre for Globalisation and Sustainability Research (CGSR) of Faculty of Business (FOB) organized a Webinar by Associate Prof Dr Rab Nawaz Lodhi entitled "Theory Development through Ethnography Research Design" on 3 July 2023. Associate Prof Dr. Rab Nawaz Lodhi is an international trainer of quantitative and qualitative research methodologies, mixed methods design and expert in data analytics.

The online seminar was attended by 30 academicians and postgraduate students. Dr Siti Zakiah, Melatu Samsi, the FOB Dean had also graced the event. During the talk, Associate Prof Dr Rab Nawaz Lodhi explained the details of ethnography research design which is one of the qualitative research designs. The talk was then followed by the Q&A session. It is hoped that the attendees would acquire insightful inputs to be successful researchers.





## MMU Showcases 4 Standout Projects at the 13th MAL Innovation Week 2023

Multimedia University (MMU) participated in the 13th MAL Innovation Week 2023, a three-day extravaganza event hosted by Infineon Technologies Melaka, recently. With the theme “Co-Innovation in Decarbonisation and Digitalisation for a Sustainable Future,” the event encapsulated the essence of innovation and sustainability. Over 500 participants converged at Infineon Technologies

Melaka for the inaugural ceremony, officiated by Infineon BE Board Members – Mr. Alexander Gorski and Mr. George Lee. The event showcased four standout projects namely TTO IP Mall, Landslide Area Prediction Using Machine Learning and Unmanned Aerial Vehicle (UAV) Imaging, Teru Teru and Sharin. These projects were represented by distinguished individuals including Assoc. Prof. Dr. Ooi Shih Yin, Mr. Chew Yee Jian, Mr. Vincent Chan, and Mr. Teh Ghee Ang, exemplified the fusion of innovation, sustainability, and technology.

A highlight of the event was the recognition of MMU’s Technology Transfer Office (TTO) for its role in bridging academia and industry. TTO’s efforts in propelling MMU’s innovations beyond academic confines were applauded. The event also provided a platform for MMU to showcase its academic offerings, particularly postgraduate courses. Infineon employees showed keen interest, underscoring MMU’s reputation for nurturing skilled professionals.

## FOE Student Receives Best Paper Award at NBEC2023 Conference

Mr. Md. Jahid Hassan, an MEngSc student and graduate research assistant at the Faculty of Engineering (FOE), received the Best Paper Award at the 2nd IEEE National Biomedical Engineering Conference (NBEC2023) held from 5th to 7th September 2023 at Ames Hotel, Melaka. His article on “Real-time segmentation of IHC images from microscope using deep learning architecture” was co-authored with supervisor Prof. Ir. Dr. Mohammad Faizal Ahmad Fauzi, co-supervisor Dr. Fazly Salleh Abas, postdoctoral

researcher Dr. Wan Siti Halimatul Munirah Wan Ahmad, and medical collaborators Prof. Dr. Lai Meng Looi (University Malaya Medical Center), Dr. Jenny T. H. Lee (Sarawak General Hospital), and Dr. See Yee Khor (Hospital Seberang Jaya).

NBEC2023 was organised by the Engineering Service Division of the Ministry of Health (MoH) Malaysia in collaboration with Universiti Teknologi Malaysia (UTM) and the IEEE Kuala Lumpur Subsection. With the theme “Adaptation Towards Green & Emerging Healthcare Technology”,



## DIFCON 2023 Highlights on Advancing Sustainable Development for a Resilient Future

Multimedia University (MMU) launched the opening ceremony of the Digital Futures International Congress (DIFCON) 2023 which was graced by Datuk Dr. Tengku Mohd Azzman Shariffadeen Tengku Ibrahim, President of Academy of Sciences Malaysia (ASM) on 26 July 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU delivered his welcoming remarks to the participants during this virtual event.

The congress is jointly organised with A'Sharqiyah University, Universiti Kuala Lumpur (UniKL) and Universiti Tenaga Nasional (UNITEN), this three-day event is held until 28 July 2023. DIFCON also has its co-located conferences namely Multimedia University Engineering Conference (MECON), International Conference on Communication, Language, Education and Social Sciences (CLESS), International Conference on Computer,



Information Technology and Intelligent Computing (CITIC), International Conference on Law and Digitalisation (ICLD), International Conference on Technology and Innovation Management (ICTIM) and International Conference on Creative Multimedia (ICCM). It is hoped that all participants would gain enriching and life-changing experiences through this congress.



## FOE Professor Receives Prestigious International Best Researcher Award

Prof. Dr. Mardeni Roslee from the Faculty of Engineering (FOE) received the Best Researcher Award at the International Research Awards on Sensing Technology 2023, recently. The award is known for its stringent selection process and generous research achievement which aims to foster groundbreaking research and

innovation in Europe. Prof. Dr. Mardeni Roslee, a distinguished researcher in the field of Wireless Sensing Technology, and a prominent expert in next generation 6G wireless communication, appeared victorious in a competitive pool of international applicants.



This achievement signifies Prof. Mardeni's individual excellence but also MMU's commitment to strengthening its research and academic ecosystem via innovative research and global academic recognition. The Sensing Technology of International Research Award 2023 seeks to promote scientific breakthroughs, technological advancements, and socio-economic progress. It offers substantial recognition for researchers and institutions, enabling them to pursue transformative projects that address key societal challenges. Prof.Mardeni's research focuses on the modern wireless sensing system and the Internet of Things. His research project involved researchers from Malaysia and Europe aiming at synergising communication and sensing technology to develop a secure, reliable, and real-time Internet of Things system



## FOE Professor Speaks on Industry 4.0 at ifmnovation Day 2023

Prof. Dr. Mardeni Roslee, our academic staff from the Faculty of Engineering (FOE) was invited as a Guest of Honour and Keynote Speaker in the "Industry 4.0 (IR4.0) Conference". Organised by Ifm Electronics, the event, which was held at Four Points by Sheraton Hotel Puchong, gathered industry experts, service providers, government agencies, academicians, and organisations with the theme "Achieving Sustainable Development Goals through Sensor

Data and Analytics." The event was also attended by Assoc. Prof. Dr. Ooi Chee Pun, Dean of FOE, and Dr. Tan Wooi Haw, Deputy Dean of FOE. The conference served as a platform to outline the state government's plan for Industry 4.0 transformation which was formulated to set the direction and outline the strategies, initiatives, and targets to drive global digital growth. This engaging and informative event also showcased the latest Ifm innovation products ready for the future in Industry 4.0. Ifm is one of the recognised global companies based in Germany since 1969. The company focuses on the optimisation and solution of technical processes by means of sensors, networking, and control systems.

With a diverse lineup of speakers, interactive panel discussions and product live demonstrations at ifm innovation Center, the event successfully delivered valuable insights and information on Ifm products that are ready for Industry 4.0 to drive digital growth worldwide.

## Understanding Trends and Challenges in Engineering and Technology

A total of 68 participants attended the MECON23 Industry Dialogue titled 'Enabling the Smart World of Tomorrow: Innovations and Challenges in Engineering and Technology'. The event was part of the Digital Futures International Congress (DIFCON 2023), where the discussion sessions were moderated by Ts. Dr. Yeo Boon Chin, Deputy Dean and senior lecturer of the Faculty of Engineering and Technology (FET). The dialogue featured Dr. Mazlan Abbas, the Chief Executive Officer of FAVORIOT Sdn. Bhd., where he shared his industry expertise and experience during the event.

The session covered a wide range of topics including artificial intelligence (AI), machine learning, sustainable solutions, and the potential of engineering and technology in shaping a smarter future. The discourse delved into multifaceted questions encompassing the transformative role of technology in the smart world, key innovations driving the transformation, challenges encountered, interdisciplinary collaboration's impact, and harnessing AI's capabilities. Moreover, ethical considerations, sustainability imperatives, and fostering synergy among government, industry, and academia took centre stage. It is hoped the participants would obtain insightful perspectives and knowledge.



## MMU Shines at InnoEx 2023 Sustainability Day with Green Innovations

Multimedia University (MMU) stole the spotlight at the Sustainability Day – Green Exhibition & Students Innovation Showcase during the Cyberjaya Innovation Week (InnoEx) on 6 September 2023, at Cyberjaya's Rekascape. Mr. Vincent led MMU's charge, presenting two outstanding projects: Potaringa and eCluck, crafted by inventive minds Lim Min Ying, Jogtika Ramasamy, and Tarshinii K. Anandanrajah. These projects redefined sustainability and smart technology.

Among the distinguished guests who graced their presence at MMU booth were YB Puan Hajah Raj Munni Sabu @ Aiman Athirah Al Jundi, Deputy Minister of Women, Family and Community Development; Datuk Abd Hamid Hussain, Yang Dipertua (YDO) Majlis Perbandaran Sepang; Mr. Kamarul Ariffin Abdul Samad, Chief Executive Officer of Cyberview and Dato' Seri Ivan The, Founder and Group CEO of Fusionex.

Their presence served as an endorsement of MMU's profound impact in these transformative fields. Coordinated by the Technology Transfer Office (TTO), this remarkable showcase is not just a moment of celebration but a stepping stone towards a greener and smarter future.





## iNVENTX 2023 Celebrates Remarkable Journey of Innovation and Invention



Multimedia University (MMU) successfully concluded its annual event, iNVENTX 2023, at the Melaka campus on 12 October 2023. Previously known as RICES (Research Innovation Commercialisation Entrepreneurship), this event served as a perfect avenue to showcase new research projects and commercial products as well as to encourage researchers to connect and collaborate with industry.

The event was kicked off by a welcoming speech by Dr. Sharlene Thiagarajah, Chief Executive Officer of TM R&D and it was officiated by Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development cum Melaka Campus Director. Prof Wong viewed this initiative as honouring the people behind creative ideas. This event also has been seen as a way of encouragement for inventors and innovators to keep trying new things and learn along the way.

For this year's edition, iNVENTX saw 283 submissions spanning from various categories. A new element was introduced with the iNVENTX Junior category in celebrating young minds with their innovative ideas. It is vital to support these young minds as it opens the door to a future full of great opportunities. The closing remark was delivered by Dr. Olivia Tan Swee Leng, Director of Technology Transfer Office (TTO), where she commended the initiative and effort of the researchers and innovators for the event. It ended with a prize-giving ceremony and a huge congratulations to all winners of the competition.

The event also received support from esteemed external partners and sponsors, including Infineon Technologies, MRANTI, Patentsworth, and InnoXTech. Their invaluable support, combined with the enthusiasm of our participants, has made this event a true testament to the collaborative spirit of innovation. The organiser extends their heartfelt gratitude to all those who played a part in making this year's iNVENTX an unparalleled achievement.



## FCI Lecturer Clinches Gold Medal at PERISA 2023

More than 300 participants from various categories participated in this event that was held at Segamat 2 Community College from 4 until 5 October 2023. Their project titled “IHOT(Islamic Hotel Transformations)” won the gold medal under the *Perdagangan, Hospitaliti, Seni & Rekabentuk* category and the team received the certificate of award during the closing ceremony.

The project emphasises on a centralized information network that was first developed to channel important information about Shariah Compliant Hotels. It contains information on the list of hotels in Malaysia that have halal certification for the food premises scheme issued by the Islamic Development Department of Malaysia (JAKIM) and the recognition of Muslim Friendly Hotels by the Islamic Tourism Center (ITC).

IHOT provides guidance on design & space, services in hotel premises, employee organisation, and manners in services characterised by Islam. It is suitable as a reference for every level of society, especially hoteliers, educators and students.



Ms. Nurasma' Shamsuddin, our academic staff from the Faculty of Computing and Informatics (FCI) together with her team members: Munirah Mustaffa from Merlimau Polytechnic and Naimah Ghazali from Ibrahim Sultan Polytechnic won the gold medal at the *Pertandingan Inovasi Pensyarah TVET Peringkat Kebangsaan (PERISA) 2023*, .





## MMU and Agmo Celebrate the Official Launch of AGMO SPACE on Campus

AGMO Space- Hub for Innovation, Collaboration, and Learning was officially launched on 23 October 2023 at the Faculty of Creative Multimedia (FCM), Cyberjaya campus. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU graced the occasion in the presence of Ts. Tan Aik Keong, Chief Executive Officer (CEO) of AGMO Holdings Berhad, Mr. Kun Huang, General Manager of Alibaba Cloud, Mr. Nik Naharudin Mohd Nasir, Director of the Department of Talent & Capability of Malaysian Digital Economy Corporation (MDEC) and Mr. Steven Low, Chief Operating Officer (COO) of Agmo Holdings Berhad.

This new space will have a huge impact on MMU students in terms of knowledge acquisition and hands-on experience, particularly in digital solution subjects including artificial intelligence, blockchain, chatbot, mobile programming, and web programming. It also has been endorsed as an MDEC Digital Maker Hub. This initiative is also made possible by AGMO Holdings Berhad, which was established by our Permata Dunia in an effort to

give back to the university by bringing in resources and industry experts to support the development of talents and innovations within the university. The event attendees also received a demonstration of the TechXperience and Tech Exhibition during the event.

The launching ceremony continued with a panel session titled "Why Technology is Critical to ESG Success". The panelists were Adjunct Prof. Chan Kok Long from the ESG Association of Malaysia, Mr. Ko Chuan Zhen from Plus Xnergy, Mr. Tan Chin Chun from Alibaba Cloud Malaysia, and Mr. Wan Ahmad Syahir Wan Ab Kadir from MDEC. The session was moderated by Ts. Steven Low from Agmo Holdings Berhad.





## MMU Bags 28 Medals at MTE 2023: SDG IIAE

Multimedia University (MMU) has achieved remarkable success at the MTE 2023: Sustainable Development Goals International Innovation Awards & Expo (SDG IIAE), which took place from October 18 to 20, 2023. MMU’s research team secured a total of 28 medals, including 3 Outstanding Awards, 2 Special Awards, 11 Gold Awards, 10 Silver Awards, 1 Bronze Award, and 1 Merit Award, showcasing their outstanding contributions to sustainable development.

The following is the list of medal winners from MMU:

Awards	Project Title	Project Leader	Project Members	Faculty
Outstanding	WeCare: A Centre Striving for Primary School Children’s Overall Well-Being	Dr. Mohd Fairuz Bin Abd Rahim	Hawa Binti Yaakub, Mary Tiong Tze Mei, Andrio Ferrynieka	FOM
Outstanding	Hijab Connect: A Mobile App for Hijab Entrepreneurs Driven by Frugal Innovation	Assoc. Prof. Ts. Dr Magiswary Dorasamy	Ilham Khalisah Binti Khairuddin, Liyana Aqilah Binti Abd Hamid	FOM
Outstanding	MarkMe: An Innovative Mobile Application for Secondary School Students and Teachers	Dr. Mohd Fairuz Bin Abd Rahim	Adil Musthafa, Ilham Khalisah Binti Khairuddin, Song Poh Ying, Wang Yao	FOM
Special	An Optimized Routing Protocols of Differentiated Services for Vehicular Testbed	Ts. Dr. Sumendra A/L Yogarayan	Ts. Dr. Siti Fatimah Binti Abdul Razak, Assoc. Prof. Ts. Dr. Afizan Bin Azman, Ts. Mohd. Fikri Azli Bin Abdullah	FIST
Special	Wallet & Handbag-fit Banknote Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit	Mr. Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET



Awards	Project Title	Project Leader	Project Members	Faculty
Gold	Wallet & Handbag-fit Banknote Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit	Mr. Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET
Gold	Unmanned Surface Vehicle for Environmental Water Monitoring and Surveillance	Prof. Dr. Lim Way Soong	Dr. Yeo Boon Chin, Lai Yan Feng, Pee Pocherd, Lim Zhi Hao, Lui Poh Wei	FET
Gold	Introducing the 'SWIPER'!!! New Revolutionized Car Wiper Using Air-Water System	Dr. Umar Nirmal	Harwinder Kaur	FET
Gold	GestureViz: A Mobile Application For Vision-Based Hand Gesture Recognition	Dr. Wan Noorshahida Binti Mohd Isa, Dr. Noramiza Binti Hashim	Aisha Sakinah Binti Saadon, Muhammad Shazwan Bin Sharum Mizan, Naufal Adha Bin Mohd Nizahan, Dr. Aziah Binti Ali, Assoc. Prof. Dr. Junaidi Bin Abdullah, Shahbe Binti Mat Desa, Dr. Zarina Binti Che Embi, Amalina Binti Ibrahim	FCI
Gold	Wallet & Handbag-fit Banknote Reader for The Visually Impaired	Ir. Dr. Wong Wai Kit	Mr. Turki Khaled Salem, Dr. Min Thu Soe, Prof. Dr. Wong Eng Kiong	FET
Gold	Unmanned Surface Vehicle for Environmental Water Monitoring and Surveillance	Prof. Dr. Lim Way Soong	Dr. Yeo Boon Chin, Lai Yan Feng, Pee Pocherd, Lim Zhi Hao, Lui Poh Wei	FET
Gold	MarkMe: An Innovative Mobile Application for Secondary School Students and Teachers	Dr. Mohd Fairuz Bin Abd Rahim	Adil Musthafa, Ilham Khalisah Binti Khairuddin, Song Poh Ying, Wang Yao	FOM
Gold	Fast Solver: A Mobile App Solution For Higher Education Institutions	Dr. Mohd Fairuz Bin Abd Rahim	Praveen Sundar Prakash, Liyana Aqilah Bt Abd Hamid, Asma Sadat Shahabi, Karen Tien Wan Lin	FOM

Awards	Project Title	Project Leader	Project Members	Faculty
Gold	TutorKAY@Home	Ms. Anushia A/P Chelvarayan	Dr. Yeo Sook Fern, Dr. Lim Kah Boon	FOB
Gold	An Optimized Routing Protocols of Differentiated Services for Vehicular Testbed	Ts. Dr. Sumendra A/L Yogarayan	Ts. Dr. Siti Fatimah Binti Abdul Razak, Assoc. Prof. Ts. Dr. Afizan Bin Azman, Ts. Mohd. Fikri Azli Bin Abdullah	FIST
Gold	Developing An Unmanned-Water Rescue Boat (U-WRB) Using Oil Palm Fibre Composites for Human Rescue Operations	Dr. Umar Nirmal	Mohd Alif Zulfakar bin Pookad, Ir. Prof. Dr. Megat Mohamad Hamdan Bin Megat Ahmad, Ts. Ir. Prof. Dr. Mohd. Yuhazhi Bin Yaakob, Dr. Saijod Lau Tze Way, Jasspeed Singh, Mohd. Fairazan Bin Mustapha	FET
Silver	DR. DIY'S BELT	Dr. Umar Nirmal	–	FET
Silver	MySedia: A Mobile App for Disaster Awareness and Preparedness in Malaysia driven by Frugal Innovation	Assoc. Prof. Ts. Dr Magiswary Dorasamy	–	FOM
Silver	Hijab Connect: A Mobile App for Hijab Entrepreneurs driven by Frugal Innovation	Assoc. Prof. Ts. Dr Magiswary Dorasamy	Ilham Khalisah Binti Khairuddin, Liyana Aqilah Binti Abd Hamid	FOM
Silver	POTARINGA: A Sustainable, Ready-to-use & Nutritious Therapeutic Food	Mr. Vincent Chan	Jogtika A/P Ramasamy, Tarshinii A/P K Anandanrajah, Syamim Binti Mohgi	FOB
Silver	Intelligent Bean De-Skinning Machine: Gout Preventive Solution	Dr. Cham Chin Leei	Assoc. Prof. Dr. Ooi Shih Yin, Prof. Dr. Tan Ai Hui, Prof. Dr. Zulfadzli Yusoff, Assoc. Prof. Dr. Ooi Chee Pun, Dr. Tan Wooi Haw, Prof. Dr. Ting Choo Yee, Assoc. Prof. Dr. Tan Yi Fei, Dr. Gan Ming Tao, Prof. Dr. Hezerul Abdul Karim	FOE



Awards	Project Title	Project Leader	Project Members	Faculty
Silver	SHARIN: One-Stop Immersive Virtual Healthcare Centre	Mr. Vincent Chan	Kalsum Pretti Binti Abdul Rahim Suren, Reyshinder A/L Ramish, Nabil Faris Ubaidi Bin Hamimudin, Muhammad Amirul Iqwan Bin Norhazmi	FOB
Silver	WeCare: A Centre Striving for Primary School Children's Overall Well-Being	Dr. Mohd Fairuz Bin Abd Rahim	Hawa Binti Yaakub, Mary Tiong Tze Mei, Andrio Ferrynieka	FOM
Silver	Design and Development of River Surveillance and Sampling Boat	Ts. Pang Shen Yee	Zen Ong Luey Hooi, Prof. Dr. Lim Way Soong	FET
Silver	IoT Based Heat Stress Prediction	Ts. Dr. Sumendra A/L Yogarayan	Lim Ke Yin, Ts. Dr. Siti Fatimah Binti Abdul Razak	FIST
Silver	A Solar-Powered Autonomous Lawnmower for Unlevelled Grassland	Assoc. Prof. Ir. Ts. Dr. Ng Poh Kiat	Kang Chun Quan, Liew Kia Wai, Elwin Nesan A/L Selvanesan	FET
Bronze	Vehicle Safe Lane Changing Pre- Warning Tool	Ts. Dr. Sumendra A/L Yogarayan	Kwang Chee Seng, Ts. Dr. Siti Fatimah Binti Abdul Razak	FIST
Merit	MindAlert: AI-powered Seizure Diagnosis System	Ts. Assoc. Prof. Dr. Pang Ying Han	Dr. Lim Zheng You, Assoc. Prof. Dr. Ooi Shih Yin, Ts. Dr. Khoh Wee How, Mr. Chew Yee Jian	FIST





## REDUCED INEQUALITIES

# “Reduce inequality within and among countries.”

*Wherever inequality, particularly in financial resources, rears its head, its detrimental effects reverberate widely. Beyond perpetuating poverty, it acts as a barrier to communal advancement, stifling the potential of talented individuals to acquire new skills and qualifications crucial for fostering wealth and prosperity.*

*Recognizing this stark reality, MMU has remained steadfast in its commitment to addressing socioeconomic disparities. Through proactive measures, both direct and indirect, the university endeavours to provide educational assistance to less fortunate students, thereby striving to level the playing field and empower individuals to pursue their full potential.*



## FAC's Charity Fun Run Raises RM4,000



More than 250 participants took part in a 5KM charity fun run, Quack-A-Run on 14 January 2023. Organised by students from the Faculty of Applied Communication (FAC), this community-based event managed to raise funds of RM4,000 to be donated to Yayasan Chow Kit (YCK) in an effort to build a new home for youth and children at risk. Dr. Ong Sue Lyn, Dean of FAC handed over the mock cheque to a representative from YCK during the event.

The event was also sponsored by DRB-HICOM FC, Yayasan Universiti Multimedia and BilaBila Retail Sdn. Bhd and individual donors. Arun Nadarajah from MSU Athletic Club emerged as the champion of the run, followed by Mohamed Abdullah Adnan, Tang Chye Fong, Muhammad Harith Aiman Munshi, and Chong Ki Zean. All five winners received gold medals and prizes sponsored by Sehaty Kitchen, Kulsocs, Made by RadW, and Antah HealthCare Group.

Sekretariat Rakan Muda (SRM) MMU Cyberjaya and Institusi Usrah (IU) joined hands to conduct a charity programme, "Love of Ramadan" at Pertubuhan Kebajikan Anak Yatim Dan Asnaf Teratak Ummi, Batu Caves, Selangor on 9 April 2023. The students also managed to raise funds from the public and sponsorship from the MMU Alumni Society amounting to more than RM2,500.

## SRM & IU Join Hands for "Love of Ramadan" Charity Programme



The students also collaborated with Iman Publication and Mydin Putrajaya for discounted books and groceries to be bought and donated to the organisation. During the programme, SRM members installed two big shelves and prepared 100 pax of *bubur jagung* and side dishes including nuggets, sausages, and fries for their Iftar meal. While IU committee members and a total of 15 volunteers conducted engaging and enjoyable activities with 60 orphan and Asnaf kids from the organisation. In a nutshell, these noble efforts have taught us how to appreciate and be grateful for every little thing that we have in our life.



## Connecting Skills and Interests to Community Needs

On 8 September 2023, a group of Diploma students from the Faculty of Creative Multimedia hosted a project called “Fun Day with MAHFAA” at the Kelab Taman Tasik Cyberjaya. MAHFAA stands for Malaysia High Functioning Autism Association, and it is built to support and empower high-functioning autistic individuals of all ages.

The students conducted a two-hour workshop entitled “Creative Stop Motion”, which was led by Jasreen Nur Edlina Jamal with the guidance of the project advisors: Ms. Siti Iradah Ismail and Dr. Junita Shariza Mohd Nasir. A total of 12 students participated in the workshop, and 3 teachers from MAHFAA assisted the project team. The workshop started with an ice-breaking activity, a stop-motion introduction, a storyboard, a

demonstration, a project presentation, and concluded with a closing ceremony.

Cash donations, certificates, and gifts were also distributed during the programme. The cash donation was derived from a fundraising project led by Ronney Teh Kim Ho. Our students gained invaluable experience with the challenges of education and the unique strengths and behaviours of autistic students. In conclusion, the students shared their talents, skills, and experiences and, at the same time, took part in this great initiative.



## YUM Hands Over the Contribution to AAKRP



Yayasan Universiti Multimedia (YUM) handed over a donation cheque for the Palestinian people to the Akaun Amanah Kemanusiaan Rakyat Palestin (AAKRP). Encik Izad Ismail, Director of YUM presented the replica of the donation cheque to Encik Mohd Hasril Abdul Hamid, Divisional Secretary, OIC and Regional Cooperation Division (ORCD), Ministry of Foreign Affairs, in Putrajaya on 22 December 2023.

YUM extends its utmost appreciation and gratitude to the MMU students and staff, Warga TM, and the public who contributed to the fundraising amounted to a sum of RM15,443.55! Your contribution and support have given hope to the Palestinian people, and we hope that this donation will help ease their burden during these challenging times. Together, we can make a difference!

## Students Make a Difference at Pusat Jagaan Kanak-Kanak Ceria Harapan



A group of 19 students and one lecturer from the Diploma in Business Administration programme at the Faculty of Business (FOB) embarked on a meaningful trip to Pusat Jagaan Kanak-Kanak Ceria Harapan in Bukit Baru, Melaka, recently. The primary objective of their visit was to engage with the children residing in the center and provide support in various ways.

Through their collective efforts, the students managed to raise a generous donation of RM2200, which was utilised to purchase essential items such as food, cleaning necessities, and toys for the children. Additionally, the students also collected used clothes to be donated to the charity organization, further extending their support.

At Pusat Jagaan Kanak-Kanak Ceria Harapan, the students were greeted by a group of 20 children, including 9 boys, 11 girls, and 2 babies, who called the center their home. The facility was staffed by 8 dedicated caretakers who worked tirelessly to ensure the well-being of the children. Under the supervision of Ms. Nur Faezah Jayiddin for the subject of MPU2409 – Personal Social

Responsibility, the students organised various engaging activities aimed at fostering a positive and enjoyable environment for the children. These activities included games, crafts, and interactive sessions that encouraged bonding and personal growth.

The overarching goal of this event was to raise awareness about the existence of the charity home within the community. By actively participating in the initiative, the students aimed to highlight the significance of public support in the form of tangible contributions, financial aid, and emotional assistance. The trip served as a reminder of the shared responsibility to care for those in need and create a sense of unity and empathy within society..





## MMU, PAWE Join Hands for Time Bank Initiative



Multimedia University (MMU) and Pusat Aktiviti Warga Emas (PAWE) Putrajaya joined hands for a digital initiative, Time Bank for senior citizens. A workshop was held on 27 November 2023, to further discuss the implementation of the initiative and how it can be expanded to PAWE nationwide.

MMU President, Prof. Dato' Dr. Mazliham Mohd Su'ud delivered his opening remarks and officiated the event. He hoped that this joint venture by both institutions will greatly impact the senior community in conducting their community services or even for their personal benefits.

MMU is the first university to develop a digital Time Bank application, and its pilot project, led by Dr. Olivia Tan Swee Leng, Director of Technology Transfer Office (TTO), was carried out with PAWE. It is hoped that this collaborative effort will bring the existing relationship between MMU and PAWE to another level and strengthen the networking.



## **Empowering Young Minds with USR with KAYFAZ: A Day of Inspiration and Learning**

“USR with KAYFAZ: Empowering Young Minds” programme, an initiative led by the teaching staff members and diploma students from the Faculty of Information Science and Technology (FIST) took place at Kompleks Anak Yatim Fatimah Al-Zaharah (KAYFAZ), Melaka on 14 October 2023. Mr. Leonard spearheaded the “Creative Thinking” activity, while Ms. Chandrika, along with two MMU diploma students, Surenthiran A/L MMarimuthu and Ng Yee Hang, led the “Logical Thinking & Coding Without Computers” module. The event aimed to create a positive and engaging learning environment, fostering teamwork, group dynamics, and self-confidence among young girls between the ages of 8 to 17 years old. The “Creative Thinking” activity has encouraged the girls to expand their imaginative horizons and embrace creative problem-solving while the other activity has opened the doors to the world of logical reasoning and programming.



A notable highlight was the generous support from our sponsors. SUBWAY provided a delicious and hearty lunch for all participants, adding to the enjoyment of the day. Additionally, the “USR with KAYFAZ” program was made possible by generous donations from FIST and anonymous donors. To commemorate the girls’ participation, they received thoughtful gifts, including stationery and special t-shirts as mementos of the day. Each participant was awarded a certificate to acknowledge their hard work and dedication to the program.

The organiser extends their gratitude to the KAYFAZ orphanage for their warm welcome and to participants who have made this event a success. Overall, this activity embodies MMU’s commitment to community engagement, knowledge sharing, and empowerment, creating a positive impact in the local community.





## SUSTAINABLE CITIES AND COMMUNITIES

**“Make cities inclusive, safe,  
resilient and sustainable.”**

*The concept of sustainable cities and communities underscores the urgent need for urban development that harmonizes economic growth, social inclusion, and environmental stewardship. Recognizing the critical role universities play in driving progress, MMU actively engages in initiatives aimed at fostering sustainability within urban environments.*

*Furthermore, MMU integrates sustainability principles into its curriculum, empowering students with the knowledge and skills needed to become agents of change in building sustainable cities. The university catalyses collective action towards the realisation of sustainable urban futures, where cities are vibrant, inclusive, and environmentally responsible hubs of opportunity and innovation.*

## AFKL & FCM Collaborate for VR Exhibition “Anthology Metaverse”

Alliance Francaise Kuala Lumpur (AFKL) collaborated with the Faculty of Creative Multimedia (FCM), Virtual programme to exhibit, “Anthology of Metaverse”, a journey of traversing realities held in Kuala Lumpur on 12 January 2023. The term “Metaverse” is a portmanteau of “meta” and “universe”, a virtual world where people can interact with a virtual object & feel connected to the world



outside their physical bodies via technology. The exhibition highlighted five artworks by virtual artist residency that embraces the idea of the internet as a ‘deterritorialised’ space. The project aims to encourage critical conversations in contemporary art and screen culture, focusing on Digital Art, Internet Art, and New Aesthetic artworks specific to Southeast Asia today. Also attending the event was Ms. Emmanuelle Marchand, Counsellor for Cooperation & Cultural Affairs of the Embassy of France in Malaysia. As part of the collaboration, one of the artists, Jérémy Griffaud was invited to give a talk and workshop on his project, The Origin of Things, which is the VR videogame that he is currently working on. He paints watercolours of an imaginary mode that he digitises and then animates by computer. The speaker graduated from the Pavillon Bosio in Monaco in 2017 and has won many awards.

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## FCM Foundation Students Showcase Artworks at ASWARA

A total of six Digital With its theme “Embracing Illustrations created by Nature”, the exhibition was organised by Akademi Seni Foundation students from the Faculty of Creative Multimedia dan Warisan Negara (FCM) were selected to participate in the ‘Re-Fresh’ exhibition from 31 January until 15 February 2023. The artworks were crafted by Nur Dania Binti Sharulnizam, Muhammad Avicenna Bin Amer, Nur Adriana Binti Mohamed Razif, Haafizah Binti Kamaruzzaman, Zafrina Fariza Binti Zainal Fitri and Muhammad Haikal Bin Ahmad Najib.

With its theme “Embracing Nature”, the exhibition was organised by Akademi Seni dan Warisan Negara (ASWARA), and 16 Malaysian universities were invited to participate and showcase their students’ artworks during the event. Following the theme, bees and nature as subject matters had been studied and developed through proper design processes. The exhibition was coordinated by Dr. Hushinaidi Abdul Hamid and students’ illustrations were mentored by Puan Mastura Abdul Rahman.





## Ambassador of France to Malaysia Graces the Closing Event of French Cinema: A Sneak Peek at MMU

Multimedia University (MMU) was honoured to receive the presence of His Excellency Axel Cruau to grace the closing event of French Cinema: A Sneak Peek at MMU on 30 March 2023. The event was jointly organised by two faculties namely the Faculty of Creative Multimedia

(FCM) and Faculty of Cinematic Arts (FCA) and The Alliance Francaise de Kuala Lumpur. The event was also supported by the Embassy of France in Malaysia. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU extended a warm welcome to the guest of honour and other invitees to the event. The two-week exhibition of French movie posters started on 15 March until 30 March 2023 and it was open to the public. The event also continued with a French film screening at MMU Cinema.

## MMU Community Convenes for Its Raya Festive Celebration at Melaka Campus



Multimedia University (MMU) hosted its Raya Festive celebration at the Melaka campus on 18 May 2023. The event was attended by staff, students as well as external stakeholders including government agencies, strategic partners, and others. The celebration also was enlivened with special performances from RAIHAN, Malaysia's top Nasyid group, on top of the staff and students' performances.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU welcomed all attendees to enjoy all festivities and mingled around with the community. On top of that, two competitions were also held during the event namely Best Dress of the Day and Best Stall and the winners received prizes from the MMU President.

The event was a great success and indeed a great platform for the MMU community from both campuses to convene under one roof to enjoy the festivities and celebrated the occasion as one. Among other attendees were Tun Zaki Tun Azmi, Chancellor of MMU; MMU Management committee members, and other invited guests.



## 100 Participants Partake in KSI MMU Melaka Korean Culture Festival 2023



About 100 participants partook in the 2023 MMU Melaka Korean Culture Festival at the Main Hall, Melaka campus on 27 May 2023. The event kicked off with a welcoming remark by Dr. Ong Sue Lyn, KSI MMU Director cum LiFE Director and it was officiated by Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development (VP SEED).

The event aimed to encourage people to learn more about Korea and its culture in a fun way as well as to elevate the social engagement of KSI MMU Melaka with the community. The attendees enjoyed tasty Korean food such as tteokbokki (rice cake) and eomuk (fish cake). On top of that, they also played Korean traditional games like jegichagi, gonggi, yut-nori, ddakji. Another interesting activity was when they wrote their names using the Korean alphabet (hangeul), and it created a lot of excitement for the participants. All in all, the event also witnessed two winners who walked away with Samsung Galaxy Earbuds with the Korean gift box and 10 finalists who received KFC vouchers. It is a great and wonderful experience for those who love to discover different cultures and information, especially about Korea.



MMU Buddhist Society (MMUBS) Cyberjaya was selected together with 45 Buddhist organisations in Selangor to co-organise Selangor State Government Wesak Celebration 2023 which was held from 3 May until 6 May 2023 in Shah Alam.

The state celebration was organised by Jawatankuasa Khas Agama Buddha, Kristian, Sikh, and Tao Negeri Selangor (LIMAS) and it was filled with activities including a bazaar and exhibition, picture book storytelling, balloon parachute, engraving experience class, eco-friendly goods making contest, organisation poster competition and Buddhist concert.

MMUBS is led by Leong Hao Cheng, our student from the Faculty of Engineering (FOE) together with 40 members representing the university to participate in the poster competition as well as volunteers during the event. The MMUBS advisor, Prof. Dr. Wong Chee Onn described that the event would be a great opportunity for their spiritual journeys.

## MMUBS Co-Hosts Selangor State Government Wesak Celebration 2023





## FOL Welcomes Students and Staff from Rikkyo University

The Faculty of Law (FOL) welcomed 20 Japanese students and Associate Professor Eriko Taoka from the College of Law and Politics, Rikkyo University, Tokyo, from 22 August 2023 to 2 September 2023. This is the first international study visit to the faculty. The opening ceremony was officiated by Prof. Dr. Abdul Mohaimin bin Noordin Ayus, the Dean of FOL, together with Mr. Tay Eng Siang, the director of the programme committee, and Associate Professor Eriko Taoka on 23 August 2023. The opening ceremony was attended by the Japanese students, the committee members, and the student ambassadors from the Multimedia University Law Society. Throughout the study visit, the Japanese students had the opportunity to explore Malaysian culture, cultural songs, traditional dances, traditional games, and local cuisine. The Japanese students were also introduced to Malaysian Legal History, the Malaysian Legal System, Common Law, and Constitutional Law, along with English language training. The students had the opportunity to visit historic places in Malacca Heritage City. They had also attended a criminal trial at the Melaka High Court, followed by a Knowledge Sharing Session with the High Court judge. They also played station games with the MULS student ambassadors as part of their outdoor activities at MMU.



During the closing ceremony, the Japanese students performed Malaysian cultural songs and dances in Malaysian traditional costumes. They also prepared a special Japanese traditional dance performance and song to express their thankfulness. Before going back to Japan, the students went to Putrajaya and Kuala Lumpur for a three-day trip, among others, to witness the Merdeka Parade. The study visit was a great success, as it provided valuable insights for the Japanese students and enriched their knowledge of Malaysia and our multiracial cultures.

## YUM Raises Funds with Wayang Kulit Charity Show



On 12 September 2023, Yayasan Universiti Multimedia (YUM) hosted a fundraising event, the Wayang Kulit Charity Show. The event was also graced by the presence of Dato' Seri Utama Mukhriz Mahathir, together with Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, at the MMU Cinema, Cyberjaya campus.

The show featured Kepten PSSTLDM (B) Dato' Prof. Emeritus Dr. Hashim Yaacob, former Vice Chancellor of Universiti Malaya, as "Tuk Dalang," and Mr. Halim Yazid as the lead musician. The Wayang Kulit show narrated an interesting story titled "A Story of a Merdeka Boy: Sweet and Bitter Memory" to the audience, who enjoyed the event and contributed to the noble cause.

## Celebrating Independence Eve with Traditional Outfits

The Students' Representative Council (SRC) orchestrated an interesting event, *Merdeka* Fashion Week on 30 August 2023. This event was a celebration of our rich cultural diversity and aimed to inspire students to reconnect with their roots by adorning traditional attire. The students wore their traditional outfits with elegance and pride. The *sarongs*, *batik*, *baju kurungs*, *cheongsams*, *sarees*, and various traditional outfits painted a picturesque scene of unity in diversity.



The *Merdeka* Fashion Week served as a meaningful reminder that despite our diverse backgrounds, we are all Malaysians, bound together by a shared love for our country. It was a testament to our commitment to celebrating our cultural heritage and honouring the values that make Malaysia a harmonious and inclusive nation. This event will undoubtedly be remembered as a vibrant celebration of our shared heritage and collective vision of a united Malaysia.



## 20 MMU Students Partake in Gimhae – Malaysia Global Youth Workshop

A total of 20 MMU students and 9 Korean university students partook in the Gimhae – Malaysia Global Youth Workshop in Gyeongsangnam-do, South Korea from 17 July until 31 July 2023. This event was part of the MMU Mobility Outbound Programme together with King Sejong Institute, MMU Melaka, and Gimhae Cultural Foundation with support from Gimhae Cultural City Centre.



The participants engaged and stayed in the Gimhae Hanok Experience Centre (a Korean traditional house) to learn and exchange culture. When the participants arrived in South Korea, they were greeted cordially by the Gimhae Cultural Foundation team at the airport. As a

welcome greeting, participants were delighted in the evening with traditional Korean music and a K-pop dance performance. During the programme, the Korean participants had the opportunity to explore Malaysian traditional clothing, games, songs, and dance. They also learnt about the Malaysian currency, tourist attractions, and cuisine. The program also included Korean language class, traditional games from both countries, learning manners for the *Gimhae Jangguncha* tea ceremony, learning *Buchaechum* (Korean traditional fan dance), tasting Korean cuisine, and exploring Gimhae's history, culture, arts, and tourism spots in nearby cities (Gyeongju and Busan).

The participants also experienced visiting the market to buy ingredients and cook Korean dishes by themselves. The Korean staff evaluated the dishes and the Kimbab team won first place.



## FCM Takes Part in Citra Nusa @ Muzium Exhibition



Ts. Dendi Permadi, a lecturer from the Faculty of Creative Multimedia (FCM) was invited to collaborate with Curazeum and Jabatan Muzium Malaysia for the project Citra Nusa @Muzium. Ts. Dendi led his team that consisted of 9 students curated a total of 5 immersive and interactive applications. Their projects were showcased at three different museum exhibition locations: Borneo Cultures Museum Kuching, Sarawak (31 July until 5 August), Matang Museum, Perak (9-10 September) and Kota Kayang Museum (3-5 November).

students who were involved in this product commercialisation project namely Haris Said, Nur Aina Zayani, Irfan Samrizan, Nur Nabilah Syahira, Nadiah Mohd Kamal, Nur Aina Syahirah, Amir Luqman Rohaizan, Nur Kayreen Annisa, and Rais Azam Rahimi. All 5 immersive and interactive applications include Perakman Projection, Touch Wall of Traditional Instrument Malaysia, Digital Puzzle Malaysia Madani, Augmented Reality (AR) Pasar Pagi, and Kegemilangan Kesultanan Melayu Melaka were monitored by Mr. Hakimi Mohamed Khalib from Curazeum and Assoc. Prof. Dr. Ruzinoor Che Mat from Universiti Utara Malaysia (UUM). Specifically, projection mapping was assisted by Mr. Muhamad Hanis Aiman. The project exhibition was based on the historical development of Malaysia, starting from prehistoric times with the discovery of human fossils known as 'Perak Man' in the Lenggong Valley.

Organised by the Malaysian Museum Department, the Citra Nusa@ Museum was held in conjunction with Hari Muzium Antarabangsa 2023. It was inaugurated by Premier Sarawak Datuk Patinggi Tan Sri Abang Johari Tun Openg. The exhibition at the Matang Museum was officiated by Dato' Seri Saarani Mohamad, the Chief Minister of Perak.



## Celebrating Diversity with Malam Ambang Merdeka

SCC MMU hosted a memorable event called Malam Ambang Merdeka. The purpose was simple yet important: to celebrate Malaysia's diverse cultures and strengthen the bonds among students.

Before the event, students eagerly prepared to showcase their cultural heritage. This resulted in a vibrant display of traditional attire from various backgrounds. To add to the excitement, there were online contests such as the Merdeka Selfie Contest and the Cultural Fashion Show. These contests allowed students to express their creativity and connect more deeply with their culture.

The highlight of the evening was a beautiful fireworks display and a heartfelt rendition of Malaysia's national anthem, Negaraku. This underscored the unity of Malaysians, no matter where they came from. In short, SCC MMU's Malam Ambang Merdeka was a wonderful celebration of diversity, unity, and patriotism. It brought students together and promoted a vision of a united Malaysia.



## LfE Students Embark on Educational Trip to Enhance Cultural Understanding

Twenty-three international students from LfE Melaka and Cyberjaya campuses, accompanied by five lecturers, embarked on a captivating educational journey on 30 September 2023. The day began early in Melaka, leading the participants to the heart of Selangor. Their first stop was the Paddy Gallery in Sekinchan, where they immersed themselves in the intricate art of rice cultivation, a cornerstone of Malaysia's cultural heritage.

After a hearty lunch and a serene prayer break at the Raja Lumu Mosque in Kuala Selangor, the group proceeded to their final destination, the historic site of Bukit Melawati. Surrounded by natural beauty, students explored the hill's rich historical legacy, deepening their connection to the region's past. This collaborative initiative aimed to foster cultural understanding among the international student community, offering an opportunity for participants to appreciate the lush paddy fields, delve into the antique gallery and experience nature atop Bukit Melawati.

The trip resonated profoundly with the participants, leaving an indelible mark on their cultural awareness. The camaraderie between students and lecturers, combined with the educational experiences, made the excursion an invaluable and unforgettable adventure.





## President Officiates FCM Portrait Exhibition

On 20 November 2023, Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU officiated the Portrait Exhibition at the e-Gallery, Cyberjaya campus. This three-week exhibition features an array of mediums and styles that focus on portraiture that encapsulate a variety of unspoken emotions. 8 lecturers from the Foundation Studies Department in the Faculty of Creative Multimedia showcased their creative artworks.







## RESPONSIBLE CONSUMPTION AND PRODUCTION

# “Ensure sustainable consumption and production patterns.”

*Encouraging sustainable consumption and production entails championing energy efficiency and ensuring equitable access to essential services, while fostering the creation of green jobs and enhancing overall well-being. This approach holds significant promise in not only alleviating poverty but also facilitating the shift towards low-carbon and environmentally conscious economies.*



## MMU Receives Recognition for Best Practices in the Concept of Green Practices



Multimedia University (MMU) Melaka was awarded the “Anugerah Penarafan Bintang Pengurusan Sisa Pepejal Sektor Komersial, Perindustrian dan Keinstitusian (STAR – CII) 2023 on 17 November 2023 at the Dewan De’ Seri Endon Pusanitapuri, Persiaran Seri Perdana, Presint 10, Putrajaya.

The award presentation was held with National Recycling Day 2023 for the category Best Practices in the Concept of Green Practices. The trophy and Certificate of Appreciation was presented by YB Tuan Akmal Nasrullah bin Mohd Nasir, Deputy Minister of Local Government Development to Dr. Syed Sham Syed Ja’afar, General Manager SSO, En. Abdul Aziz Abdul Wahab, Senior Manager FMD and Pn. Ranjithamalar Muthaiah, Manager FMD.

Organised by Solid Waste Management and Public Cleansing Corporation (SWCORP), under the Ministry of Local Government Development to provide rating and recognition to commercial, industrial and institutional premises that have shown commitment and best practices in solid waste management such as achieve the compliance level of solid waste management such as segregation and reduction of waste, practise a recycling culture on the premises and carry out an awareness campaign and implementation towards zero waste on the premises.

The award was presented to MMU Melaka as an appreciation for the efforts and initiatives on the best solid waste management practices implemented by Campus Environment Unit (CEU), FMD as well as our active involvement in ensuring environmental sustainability.



## Enhancing Students' Knowledge on Environmental Protection

A total of 38 students participated in a field trip to Tzu Chi Recycling & Education Centre in Ayer Keroh, Melaka on 19 May 2023. The trip was organised by the Foundation in Business Department, Faculty of Business. The students were accompanied by three lecturers namely Ms. Kerk Peck Hoon, Ms. Ng Lik Neo, and Ms. Goh Wei Wei.

The trip aimed at raising awareness of environmental protection among MMU students and how they could further apply it on campus. The students partook in a tour

around the centre which consists of workstations, a gallery, a thrift store, and a reading corner. They also experienced a hands-on activity, where they were given 20 minutes to do the sorting of recyclable items.

Towards the end of the visit, a brief talk about environmental protection was given and it was ended with a kahoot game. All in all, it was indeed a fruitful trip, and it is hoped that the students could apply the knowledge gained to make the university a more sustainable campus.







## CLIMATE ACTION

# “Take urgent action to combat climate change and its impacts.”

*The pervasive effects of climate change are evident in the disruption of both natural ecosystems and human societies on a global scale. From rising temperatures and extreme weather events to shifts in precipitation patterns and sea level rise, these changes pose significant risks to entire nations, disproportionately affecting marginalised communities including women, children, and the elderly, who bear the brunt of dwindling resources, food insecurity, and water scarcity.*

*At MMU, we are committed to supporting initiatives aimed at combating climate change, whether through direct action or indirect means, as part of our dedication to environmental sustainability and social responsibility.*

## Ingenious Mind Challenge 2023 Promotes Green Technology for a Sustainable Future



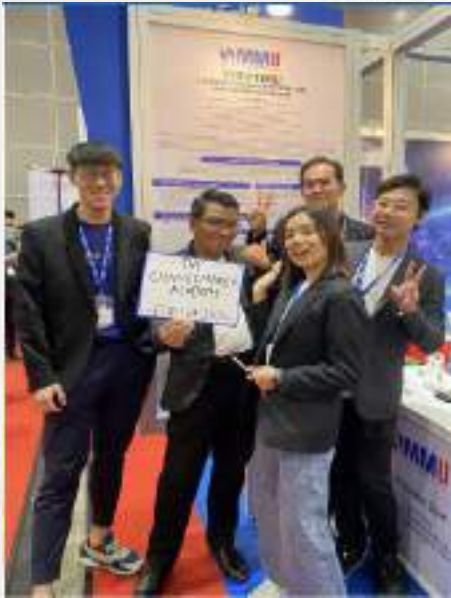
The Faculty of Management (FOM), in collaboration with the Faculty of Management Society (FOMS) organised its 5th edition of the Ingenious Mind Challenge, a platform dedicated to fostering innovation and nurturing young talent from 15 until 18 May 2023. For this year, the challenge focused on the theme of “Green Technology for a Sustainable Future,” aiming to inspire and empower young minds to create innovative solutions that address pressing environmental challenges.

A total of 32 teams from diverse backgrounds registered, reflecting the immense interest and dedication to finding sustainable solutions among the youth. There are two key components for the challenge: a poster showcase during the preliminary round and a final pitch round. The participants presented their research and project ideas through visually engaging posters, allowing them to showcase their understanding of green technology and its potential applications.

The final round of the challenge witnessed the selected teams presenting their innovative solutions to a panel of esteemed judges and an eager audience. The teams’ pitches demonstrated their technical prowess but also their ability to think critically and proposed feasible green technology initiatives that can positively impact the environment. As a result, Team Warriors won first place, followed by Team TerraVictories and The Achievers. Meanwhile, the Best Presenter Award was clinched by Catherine Goo, from Team Chanranhan Mirae.

Special gratitude to the sponsors, a panel of judges, and student committees for making the Ingenious Mind Challenge an incredible success. As the world grapples with pressing environmental issues, the Ingenious Mind Challenge 2023 comes as a ray of hope, showcasing the determination of the next generation to make a positive impact. By encouraging young minds to explore green technology, this challenge aims to be a catalyst for transformative change and inspire sustainable solutions in diverse sectors.





MMU received another recognition when Team Teru Teru won the Gold Medal Award under the Professional Inventor Category at the International Virtual Expo of Innovation Product and System Design (INVIDE 2023) on 23 June 2023. The team of Teru-Teru

consists of the Project Leader, Mr Vincent Chan (Lecturer of Faculty of Business), and team members namely Lim Min Ying (Undergraduate of Faculty of Engineering), Ng Jin Yang (Undergraduate of Faculty of Information Science and Technology), Jeffrey Quek Shue Yew (Undergraduate of FOB), and Teh Ghee Ang (Postgraduate of FIST). With their idea, “A Crowdsourcing Flood Prediction and Alerting Application”, the project focused on the theme of Agricultural/ Environment/ Rural/Space Innovation, where around 250 representatives from government and private universities, polytechnics, or skills development centres, vocational colleges or open categories participated in the competition. INVIDE 2023 is an innovation competition, in

## Team Teru Teru Wins Gold Medal Award at INVIDE 2023

which, innovative products and systems related to various science and technological fields are exhibited as a solution for the presented problems.

The expo was held for the first time as a national-level exhibition in 2020, received a total of 220 participations from various schools, the Institute of Higher Learning (IHL), and open inventors, and in the year 2021 with a total participation of 376 innovation products. It aimed to provide fresh exposure to the various level of inventors, as well as to encourage a culture of innovative design focused on the latest technologies such as the Internet of Things (IoT) and technologies-related inventions, in line with the theme of the expo. All in all, it was a perfect avenue for the participants to get exposure and learn about the latest technologies and designs.

## IEEE MMU Student Branch Clinch Two Awards at the IEEE Malaysia Dinner 2023

Institute of Electrical and Electronics Engineers (IEEE) Multimedia University Student Branch clinched two awards at the recent IEEE Malaysia Dinner which was held at Sheraton Imperial Kuala Lumpur on 24 June 2023. The guest of honour for the dinner was Datuk Ts. Dr. Norazman Bin Hassan, who represented YB Datuk Arthur Joseph Kurup, the Deputy Minister of Science,



Technology, and Innovation. The first award is the 2022 IEEE Malaysia Outstanding Student Volunteer Award which was presented to Ms. Lim Min Ying, a final-year student from the Faculty of Engineering (FOE). Min Ying was the former Chair of the IEEE MMU Student Branch and has been responsible for many IEEE-related activities both at MMU as well as at the national level. The second award that was won by the IEEE MMU Student Branch is the 2022 IEEE Malaysia Activity Innovation Award. The award was given for the project “Smart Farming using IoT and Signal Processing” which was conducted by the student branch in 2022.

## Academic-Industry Collaboration 'WAKE UP TIOMAN' Champions Climate Action



A pioneering partnership involving 30 lecturers from Multimedia University (MMU) and eight other esteemed institutions has culminated in the Corporate Social Responsibility (CSR) venture named 'WAKE UP TIOMAN: Mitigating Climate Change Through Social Innovation.' Taking place from July 20 to 22, 2023, in Kampung Tekek, Tioman Island, under the leadership of the Ministry of Higher Education (MOHE), this endeavour showcases the integration of environmental preservation, community development, and climate change mitigation, with a focus on enhancing the local community's well-being.

Guided by Project Director Dr. R Kanesaraj Ramasamy of MMU, the initiative is structured around three pivotal sub-projects: Coral Restoration, Climate Change Warrior, and Waste Management. These interconnected efforts strive to cultivate awareness among Tioman Island's residents about the dire consequences of coral reef degradation, the urgency of addressing climate

change, and the pivotal role of effective food waste management in sustainability. Drawing expertise from a consortium of universities including MMU, Universiti Sains Malaysia (USM), Universiti Sultan Zainal Abidin (UNIZA), Universiti Teknologi Malaysia (UTM), Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Sains Islam Malaysia (USIM), Universiti Putra Malaysia (UPM), Universiti Malaysia Perlis (UNIMAP), and Universiti Teknikal Melaka (UTEM), the project signifies a multi-pronged approach to address the island's complex environmental and societal challenges. Dr. Kanesaraj's comprehensive vision encompasses the establishment of new coral reefs, the empowerment of young climate advocates within the local school community, and education on prudent food waste practices, all harmoniously working to steer Tioman Island toward a more sustainable future, marked by substantial contributions to climate change mitigation. The inaugural event received

distinguished guests, including Dato' Mohd Sharil Abdullah, Director of Industry and Community Collaboration Division from the Department of Higher Education at the Ministry of Higher Education, and Mustaza Bin Mukri, Assistant Director of Student Development Sector from the Pahang State Education Department. With support from prominent sponsors like Yayasan Telekom Malaysia and Malaysia Rail Link, the 'WAKE UP TIOMAN' initiative incorporates the pivotal roles played by academic institutions and corporate entities in the collective endeavour to address global environmental challenges. Through this collaborative initiative, academia and industry align their efforts, fortifying the response to the pressing concerns of climate change.





## LIFE BELOW WATER

# “Conserve and sustainably use the oceans, seas and marine resources for sustainable development.”

*The vitality of our oceans and seas is paramount to our survival. With over 70 percent of the Earth's surface covered in water, its influence on humanity is undeniable. However, despite its importance, we have inflicted significant harm upon this invaluable resource. It is imperative that we take action to safeguard water resources by eliminating pollution, curbing overfishing, and implementing responsible management practices to protect marine life worldwide.*

*Within the MMU community, there is a commitment to actively seek out opportunities to contribute to projects aimed at supporting and enhancing the well-being of marine life.*



## **MMU Supports Government's Initiative in Promoting River Sustainability**

On 26 May 2023, a site visit to Denai Sungai Kebangsaan (DSK) Anak Sungai Gajah in Putrajaya was conducted by MMU team. Led by the President, Prof. Dato' Dr. Mazliham Mohd Su'ud, the team was warmly welcomed by Ir. Ts. Muhammad Zulhusni Che Razali, Deputy Director, Director of Irrigation and Drainage. In his speech, Prof. Dato' Dr. Mazliham emphasised on the support that would be rendered by the university in promoting the river sustainability.



Prof. Dato' also mentioned on the university's initiative which related to the eco-sustainability efforts including Smart Farming lab and others. Among other attendees were Dr. Tan Swee Leng, Director of Technology Transfer Office (TTO); Assoc. Prof. Dr. Ooi Chee Pun, Dean of Faculty of Engineering (FOE) and other staff members.





## FOB Students Engage in Meaningful Experiences for PSR Subjects

In May and June 2023, FOB students enrolled in the PSR subjects under the supervision of Ms. Wan Nur Azah Wan Nahar embarked on a series of three engaging activities across Melaka and Selangor. These activities aimed to provide valuable experiences and broaden their horizons.

The first activity took place at Zoo Melaka, where students volunteered to care for the animals. They were involved in various tasks such as feeding the animals, preparing their food, cleaning their enclosures, and collecting eggs. This hands-on experience allowed the students to gain insight into the daily routines and specialised dietary needs of the diverse range of animals present at the zoo. By actively participating in the management of these animals, the students acquired a deeper understanding of the responsibilities involved in animal care.

The second activity focused on promoting beach cleanliness and fostering teamwork and leadership skills among the students. Located at Klebang Beach, Melaka. FOB students actively cleaned the beach and took the initiative to put up informative posters near the rubbish bins. Additionally, they conducted interviews with tourists and visitors to gather their opinions on Klebang Beach and suggestions for enhancing its



facilities. This activity not only raised awareness about the importance of maintaining a clean environment but also encouraged the students to work together effectively as a team while demonstrating leadership qualities.

Lastly, the FOB students visited the Pusat Penjagaan Kanak-kanak Cacat Shan Dai, an orphanage in Selangor, with the intention of spreading love, happiness, and affection to the less fortunate. The visit aimed to boost the confidence of the orphans and develop empathy among the students. Notably, the students successfully secured a sponsorship of RM900 from the Coca-Cola Company, which they donated to the orphanage. During their time at the orphanage, the students engaged in various activities such as dancing, watching movies, and creating artistic bookmarks and drawings. These interactions not only

brought joy to the orphans but also allowed the FOB students to cultivate a sense of empathy and appreciation for the challenges faced by others in society.

Overall, these three activities provided FOB students with unique opportunities to gain practical knowledge, develop essential life skills, and make a positive impact on their surroundings. Through their involvement in volunteering, environmental conservation, and supporting an orphanage, the students broadened their perspectives and learned valuable lessons that will serve them well in their future endeavors.



## FET Students Showcase Innovative Invention in Capstone Design Project



*Amphibious Trash Collector (ATC) which can collect the simulated trash from the water and ground course*

A total of 27 students of Mechanical Engineering (ME) or 6 project teams from the Faculty of Engineering and Technology (FET) undertook Capstone Design Project to propose and showcase their innovation by designing, analysing, building and testing a prototype of Amphibious Trash Collector (ATC) which can collect the simulated trash from the water and ground course respectively, recently. The competition, which took place in front of Fluid Mechanics laboratory at the FET building started with a design and dimensional check, followed by a slalom (zigzag) test in order to test the maneuverability and structural integrity of the prototype.

The ATC subsequently proceeded to collect land and water trash in which a reliable pick-and-place and a floating mechanism were required to

allow the trash to be collected successfully, especially on the water. The ATC was also required to pass through a narrow and straight passage in order to ensure its motion synchronisation and drivability.

At the end of the competition, the ATC showed its capability of disposing of the collected trash at a designated trash collection point. The competition was judged based on the prototype design, creativity, functionality, and the quality of the workmanship. The competition and the project assessments were evaluated by the course lecturers – Dr. Lim Boon Kian, Dr. Liew Kia Wai, and Assoc. Prof. Ir. Ts. Dr. Ng Poh Kiat.

Three winning teams were each awarded with a uniquely designed and 3D-printed award plaque and certificate of awards. Throughout this project and the competition, the students learned the skills and the experience related to the engineering product design process, in which they applied their engineering knowledge and soft skills to solve near real-world complex engineering problems.





## LIFE ON LAND

**“Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.”**

*Preserving forests and protecting natural habitats are paramount to sustaining ecological balance and halting the degradation of lands. Additionally, combating desertification and biodiversity loss are critical in safeguarding the long-term benefits provided by land-based ecosystems, ensuring sustainable livelihoods for future generations.*

*At MMU, we are deeply committed to fostering a healthy and supportive environment. Our involvement in ecosystem initiatives extends to raising awareness about responsible technology usage, managing e-waste and plastic disposal, promoting energy conservation, and preserving biodiversity. Through education and advocacy, we strive to cultivate a culture of environmental stewardship within our community and beyond.*

## TM R&D and Jabatan Perhutanan Negeri Selangor Embark on a Transformative Journey towards Environmental Conservation



The LoC was signed after the inaugural Selangor Royal Heritage Forest Declaration Ceremony officiated by His Royal Highness, Sultan Sharafuddin Idris Shah ibni Sultan Salahuddin Abdul Aziz Shah, Sultan of Selangor. In addition, TM R&D participated in the exhibition where we showcased our Smart Integrated Dashboard. The dashboard represents a groundbreaking leap in biodiversity management, capable of integrating various data from key departments under the State of Selangor and the Ministry of Natural Resource, Environment, and Climate Change. We also showcase our varied solutions namely the connected vehicle system, fixed wireless access connectivity and data-driven helmet for workforce safety. TM R&D a subsidiary of Multimedia University (MMU) has signed a Letter of Collaboration with Jabatan Perhutanan Negeri Selangor (JPNS) to embark on a transformative journey towards environmental conservation. The collaboration focuses on the study, analysis, and mitigation of challenges related to forest conservation and rehabilitation for CFS-Selangor.

## Raising Public Awareness of Wildlife Conservation

A group of MMU students consisting of Lashvini Velao from the Faculty of Business (FOB), Clarice Lee Kah Yee from the Faculty of Law (FOL) and Sarveishini Ravichander (FOB), continues to serve the community by raising public awareness through an event called PANGOLINGO on 10 March 2023 in Melaka. The team emerged as champion at the ACTION Competition on the wildlife beneficiary last year.

PANGOLINGO which stands for “Pangolin Bingo”, is a game that was created to help raise awareness of the trafficking of pangolins as well as to inspire young people to save this



by MMU Animals and Pets Society. On top of that, the MMU team is currently working on a research paper on pangolins. The MMU team managed to collect over RM400 and they received a certificate of appreciation from Danau Girang Field Centre



## 63 MMU Students Involve in Planting 2000 Mangrove Trees

On 19 August 2023, 64 MMU students volunteered to plant 2,000 mangrove trees at Kuala Selangor Nature Park under the UMW Green Shoots (UGS) Initiative. UGS is an initiative under UMW that aims to plant 300,000 mangrove trees by the end of 2023. This time, the activity

saw the participation of 150 volunteers, including WOWriors from UMW Group Procurement, UMW suppliers, the Malaysian Nature Society, and student volunteers from Multimedia University (MMU). The combined efforts resulted in 2,000 newly planted mangrove trees within 3 hours.



The volunteering activity was coordinated by Engsoc MMU Cyberjaya, IEEE MMU SB, and MMU Superheroes. All volunteers were given opportunities to understand the mangrove's ecosystem and mangrove planting which were instructed by Mr Asokumar Rajadurai, the programme officer of Kuala Selangor Nature Park. Certificates of participation were given to all of the volunteers by the end of the programme. Thank you for making a positive contribution to environmental stewardship and sustainability!







## PEACE, JUSTICE AND STRONG INSTITUTIONS

**"Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels."**

*MMU stands as a beacon for advocating justice, efficiency, and accountability across generations, leveraging its reputation as a premier institution renowned for producing skilled professionals in fields such as law, accounting, and engineering in Malaysia.*





Dr. Bahma Sivasubramaniam, our academic staff from the Faculty of Management (FOM) was invited by the Prime Minister's Department (Law and Institutional Reform) to contribute towards the proposed amendments to the Sexual Offences Against Children Act (Act 792) and the Evidence of Child Witness Act 2007. An engagement session chaired

by YAB Dato Sri Azalina Othman the Minister of Law and Institutional Reform was held at the Asian International Arbitration Centre in Kuala Lumpur on 9 January 2023. The session, first of many, was attended by judges, lawyers, delegates from UNICEF, ICRC, academics, medical officers, and other interested bodies.

### FOM Expert Invited to Contribute to Act Amendment

Multimedia University (MMU) signed a Memorandum of Understanding (MoU) with Inns of Court Malaysia (ICM) in a ceremony held at Persada Permata Dunia (Main Hall) MMU Melaka campus on 7 January 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Dr. Kuek signed the pact together Tun Arifin Zakaria, President of ICM. The event was also enlivened by the presence of Tun Dato Seri Zaki Tun Azmi, Chancellor of MMU.

### MMU and ICM Sign Pact to Bolster Relationships



Following the ceremony, the event continued with a forum entitled 'Graduating from Law School, What Next?' by a panel of speakers from the ICM namely Yang Arif Datuk Noorin Badaruddin, Yang Arif Tuan Mohamed Zaini Mazlan, and

Yang Arif Datuk Seri Mohd Firuz Jaffril. Moderated by Ms. Ooi Suan Kim, Honorary Treasurer of ICM, the forum enlightened the audience, especially our law students on the next step in their career journey after graduating from law school.

At the end of the event, the ICM delegation had the opportunity to visit Law Library and E-Moot Court. It is hoped that this cooperation would be strengthened with combined efforts between the two parties.

## FCA Hosts Its Permata Dunia's Film Screening, Project: High Council

On 15 February 2023, the Faculty of Cinematic Arts (FCA) was honoured to screen the first episode of the new Astro Shaw premium series called Project: High Council at MMU FCA Cinema, Cyberjaya campus. This masterpiece is produced and directed by our Permata Dunia, Ms. Zulaikha Zakaria (Director), and Mr. Amir Shahlen (Producer).

Project: High Council is a story of a troubled student, Fakhri who is on a mission to end bullying and injustices in his elite boarding school by dismantling the High Council. The screening event also featured the question and answer (Q&A) session by the filmmakers and the main cast with Naim Daniel and Amir Ahnaff. The event also was enlivened by the presence of students who also attended the film screening. We at MMU are proud of our Permata Dunia's achievements and we are all rooting for you to achieve your success.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU also attended the screening event and showed his support together



## Business Society Representatives Participate in Study Visit to Parliament of Malaysia

A group of students from MMU in charge of the Speaker's Business Society (MUBS) Office at the Parliament House. participated in a study visit to the Malaysian Houses of Parliament on 14 March 2023. Organised by Junior Chamber International, Malacca City Entrepreneur (JCIMCE), the student group which was led by Jeffrey Quek Shue Yew from the Faculty of Business (FOB) had the opportunity to sit in the public gallery of the House of Representatives and experienced the proceedings.

The students were also very excited to visit "The Royal Stairs" or "Once a Year Stairs", which is exclusively accessible to the Yang di-Pertuan Agong and his Consort when they come to the House of Representatives to officially open the new session of Parliament. This visit has surely benefitted the students in gaining real experience and understanding of the democracy concept.

The students also were given a guided tour of the place by Ms. Alethea Wong, the officer who is





## MMU Emerges as Malaysian Champion at the 7th AIAC Pre-Moot 2023

Multimedia University (MMU) team emerged as the Malaysian Champion after defeating the team from Universiti Malaya (UM) at the 7th AIAC Pre-Moot for the Willem C. VIS International Commercial Arbitration Moot, which was held in the Asian International Arbitration Centre from 10 until 12 March 2023. The MMU team consisted of Law students namely Aaron Abishai Andrew, Jaskeerat Kaur, Leong Wei Shen, Tan Zec Kie, and their coach Ms. Nanneri Nanggai. It was a double-win



for MMU when Aaron Abishai Andrew also bagged the Best Oralist in the Malaysian Final award in the competition. Additionally, the team made it to the Top 8 of the International Rounds.

The competition is an annual commercial arbitration moot competition that is organised by AIAC, a global hub for Alternate Dispute Resolution (ADR) proceedings, and caters to both domestic and international ADR parties. For the international general rounds, MMU team went against West Bengal National University of Juridical Sciences (India) and Pontifical Catholic University of Sao Paulo (Brazil), where they represented the Claimants, and Universitas Padjadjaran (Indonesia) and Advance Tertiary College (Malaysia), where they represented the Respondents.

They also went against San Beda University (Philippines) in the Top 16 rounds, and against Instituto Tecnológico Autónomo de México (Mexico) in the Top 8. After making the Top 8 in international rounds, our students managed to be listed as the Malaysian Finalists and competed with the team from UM in the finals. The same team represented MMU in the Willem C. VIS International Commercial Arbitration Moot, which was held in Vienna from 31 March to 6 April 2023.

## Fostering Safety Awareness amongst Community



On 10 June 2023, a Community Awareness Talk was organised by the Junior Chamber International, Malacca City Entrepreneur (JCIMCE) at JCI MCE Secretariat. Co-hosted by MMU Business Society (MUBS) and Malaysia Chinese Women Entrepreneurs Association (MCWEA), the event helped the community to gain safety awareness by DSP Nor Azlinda Hj. Nordin, Pegawai Turus the Royal Malaysia Police (PDRM). This awareness talk aimed to bridge the gap between law enforcement agencies and community members in fostering a sense of trust, understanding, and collaboration. Among the topics covered were related scammer cases, e-Reporting, and others. This initiative demonstrates the students' commitment to creating a safer environment but also contributes to the shared goal of building a stronger and more secure community.

## Tun Zaki Shares His Insights on “Think and Act like a Lawyer”

Tun Dato’ Seri Zaki Tun Azmi, the Chancellor shared his insights and motivational talk with 100 students of the Faculty of Law (FOL) at the Melaka campus on 17 May 2023. Organised by faculty, the talk entitled “Think and Act like a Lawyer” aimed to give students an understanding of the legal profession as an advocate and solicitors and building of their character and career path in the field. The event kicked off with a welcoming remark by Prof. Dr. Abdul Mohaimin Noordin Ayus. Tun Zaki, who is also the Adjunct Professor of the faculty emphasised the character of a future lawyer including possessing a high degree of integrity, being able to



express clearly in writing and orally in Bahasa Melayu and English, being able to analyse in a logical order, maintaining a good relationship with other lawyers without sacrificing client’s interests and be confident. On top of that, Tun also stressed the importance of having good skills including writing, creative thinking, leadership, and listening. Among other event attendees were Deputy Deans of FOL; Mr. Amir Nur Ikhwan Amernudin, Ms. Asmida Ahmad, Ms. Rebecca Mathan, and other academic staff.

## MMU Student Represents Malaysia for YSEALI 2023



Ong Yong Xun, an Accounting student from the Faculty of Management (FOM) and student start-up founder of ‘JomStudy’ apps represented Malaysia to participate in the Young Southeast Asian Leaders Initiative (YSEALI) on Social Entrepreneurship and Economic Development for the 2023 Spring intake. Yong Xun was selected as one of the four Malaysian to join the programme from 25 March until 28 April 2023.

a platform for Fellows to get an overview of entrepreneurial approaches that are employed to address social and economic issues. The Fellowship will review the development, history, challenges, and successes of enterprises and community leaders, in the United States and globally. Students will also meet with community leaders, entrepreneurs, and representatives of non-profit organisations.

The highly competitive YSEALI Academic Fellowship programme is being hosted by University of Connecticut and University of Texas-Austin, where it serves as



## FOL Conducts KTP Programme and Legal Awareness on Fake News in Johor

A group of Faculty of Law (FOL) academics has conducted a knowledge transfer programme (KTP) in Tanjung Sedili Kota Tinggi, Johor to fishermen and farmers community on 28 May 2023. The Faculty received an invitation from their strategic partner, Universiti Malaysia Terengganu (UMT) to conduct the programme which is one of the agenda in Program Semarak Komuniti Kota Tinggi officiated by Minister of Higher Education, Yang Berhormat Datuk Seri Haji Mohamed Khaled Nordin.

The programme started with an introduction of fake news and the effect of spreading the fake news in social media by Mr. Amir Nur Ikhwan Amernudin to almost 20 participants. The topic was discussed in both legal and social perspectives. Further information was added on the effects of fake news that could lead to increase polarisation and potential conflicts amongs the public. The programme ended with a gift awarded to active participants who took part during the session. It is hoped that the programme would create more awareness among the community. FOL has also made contributions to the community as part of their USR projects. The programme was a success, and the FOL team aims to create and spread more legal awareness programmes in the future. Other academics who were involved were Ms. Nur Fazini Asro binti Ramzi Sulaiman, Ms. Asmida Ahmad, Ms. Nadia binti Abu Hasan and Ms. Putri Syaidatul Akma binti Mohd. Adzmi.



## MMU Team Wins 3rd Place in Debat Antirasuah SPRM 2023

Let us congratulate the MMU Malay Debate team from PENTAS Club for winning 3rd place in *Debat Antirasuah SPRM 2023*. The event was held from 2 until 4 June 2023 in virtual and physical mode at Universiti Malaysia Sabah (UMS). The competition was jointly organised by the Malaysian Anti-Corruption Commission (MACC), the Universiti Malaysia Debate Council (MADUM), the Universiti Malaysia Sabah (UMS), the Kuala Lumpur City Hall (DBKL), and the Dewan Bahasa Dan Pustaka (DBP).

Our team was represented by Yang Fatin Syahira from the Faculty of Engineering, Sofea Irdina (Faculty of Law), Misha Qistina (Faculty of Law), and Arif Fahmi (Faculty of Computing and Informatics). They walked away with cash prizes of RM3,000. The team also was guided and mentored by Rafiq Akmal, MMU's debate alumni.

The competition is open to the first 40 teams that register among IPTs in Malaysia. MACC Community Education Division Director, Datuk Razim Mohd. Noor said the objective of the competition is to educate students to be aware of the current situation and to be more courageous in voicing their opinions on the issue of corruption and integrity. It is hoped that this achievement would inspire other MMU students to engage, participate, and show their potential in debate competitions.



## MMU President Invited as Guest Speaker at ‘Konvensyen Ketua Integriti dan Governans’

Prof. Dato’ Dr. Mazliham Mohd Su’ud, the President of MMU was invited as a guest speaker in the ‘Konvensyen Ketua Integriti dan Governans’ at the Cyberjaya campus on 19 June 2023. Prof. Dato’ Dr. Mazliham delivered his talk entitled “Pendigitalan dan Teknologi dalam Memperkasa Integriti dan Tadbir Urus” to the audience. In his talk, Prof. Dato’ emphasised on the importance of digitalisation and technology in empowering integrity and governance among the employees.

Organised by the Malaysian Anti-Corruption Commission (MACC), the event was officiated by Dato’ Nor Azmi Karim, Director of the Agency Integrity Management Division. Among other panellists were Datin Yasmin Tan Sri Ahmad Merican, Member of the Consultation and Corruption Prevention Panel (CCPP) and Puan Suhana Dewi Selamat, Chief and Executive Director of Khazanah Nasional Berhad. It is hoped that all participants gained insightful information and knowledge from the event.



## “SCAM UNMASKED: ARTISTIC EXPLORATIONS OF DECEPTIVE REALITIES” Exhibition Showcases Creative Artwork by MMU and UTAR Students



An exhibition titled ‘SCAM UNMASKED: ARTISTIC EXPLORATIONS OF DECEPTIVE REALITIES’ was organised at the e-Gallery, Cyberjaya campus from 22 June 2023 until 16 July 2023. This collaborative effort between Multimedia University (MMU) and University Tunku Abdul Rahman

(UTAR) aims to shed light on the deceptive practices prevalent in our society through the creative expressions of talented student artists.

The exhibition featured a remarkable display of 31 sculptures and 9 paintings created by the Foundation Programme of Faculty of Creative Multimedia (FCM) students, alongside 26 captivating posters from the Creative Advertising Strategy subject at UTAR. These thought-provoking artworks delve into the complex world of scams, uncovering hidden truths and aiming to raise awareness about their impact on individuals and communities. By encouraging critical thinking and vigilance, the exhibition empowers viewers to uncover layers of deceit while appreciating the artistic interpretations and endeavors of these talented student artists.

The launch was graced by YDH DCP Dato’ Sasikala Devi Subramaniam, Selangor Deputy Police Chief and Ir. Prof. Dr.

Wong Hin Yong, Vice President of Academic and Innovative Learning (VP AIR) of MMU. Among other attendees were distinguished officers from Royal Malaysia Police (PDRM), FCM faculty members, Foundation Programme students and UTAR academics. Their collective presence reflects the collaborative efforts between academia and law enforcement in combating scams and deceptive practices. Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU also made a visit to the exhibition on 13 July 2023.

The exhibition was the result of collaborative effort between the participating students and a dedicated team of their lecturers, namely Ts. Dr. Vimala Perumal, Dr. Elyna Amir Sharji, Dr. Hushinaidi Abd Hamid, Mdm. Mastura Abdul Rahman, Mdm. Nurainun Baniyamin, Mdm. Nur Ainina Fauzan Md Fuad and Mr. Aliff Afiq Mohd Anuar from MMU, as well as Dr Khor Kheng Kia from UTAR.



## MMU, GSMA & MCMC Join Hands for the CTPR Master Class 2023



Multimedia University (MMU), Global System for Mobile Communications Association (GSMA) of London and Malaysian Communications and Multimedia Commission (MCMC) joined hands to host a five-day of Converged Telecommunications Policy and Regulations (CTPR) Master Class of 2023 from 24 July until 28 July 2023. Datuk Mohamad Fauzi Md Isa, Secretary General of Ministry of Communications and Digital launched the opening ceremony at Zenith Hotel, Putrajaya. Prof Dato' Dr Mazliham

Mohd Su'ud, President of MMU also delivered his welcoming speech to the invited guests and participants during the event. For this year, there are five modules which include 10 lectures and 7 panels of discussion throughout the programme. The programme has convened senior-level executives and professionals in national regulatory agencies, relevant government ministries and related service providers.

Among other attendees during the launching programme were Tan Sri Mohamad Salim Fateh Din, Chairman of MCMC; Tan Sri Dr. Halim Shafie, Advisor for CTPR Master Class 2023; Mr. Niall Magennis, Senior Director of Government and Regulatory Affairs, GSMA London, MMU Management Committee, Dr. Bahma Sivasubramaniam and organising committee members.

YB Teo Nie Ching, Deputy Minister of Communications and Digital graced the closing ceremony and presented the certificates to the participants on 28 July 2023. The event was also attended by Dr. Sharlene Thiagarajah, CEO of TM R&D, Tan Sri Dr. Halim Shafie, Mr. Niall and Ms. Khaneeza Khalid from MCMC.

## FOL Students Secure Coveted Spots in Chief Justice of Malaysia Programme

Four students from the Faculty of Law namely Si Li Yee, Goh Kah Wei, Ong Wei Ying, and Sivanesh Raj Ramachandran have been selected for the esteemed Judicial Clerkship and Judicial Internship with the Right Honourable Chief Justice of Malaysia Programme. Si Li Yee is assigned as a Judicial Clerk in the Research Division, Office of the Chief Justice, Federal Court of Malaysia, while Goh Kah Wei, Ong Wei Ying, and Sivanesh Raj Ramachandran will undertake Judicial Internships during specific periods in October and November 2023.



Congratulations to these exceptional individuals, whose dedication and academic excellence have earned them these prestigious positions. Their selection not only honours the FOL but also positively impacts the wider legal community as well as our university. MMU takes great pride in their representation of our institution and wish them continued success as they embark on this valuable journey in the legal field.

## LifE Organises Integrity and Leadership Day 2023



The Learning Institute for Empowerment (LifE) organised an event called Integrity and Leadership Day 2023 at the Melaka and Cyberjaya campuses on 19 September and 21 September 2023 respectively. This event was held as part of the General Studies Subjects, also known as MPU subject (Integrity & Leadership). The event kicked off with a welcoming remark by Dr. Ong Sue Lyn, Director of LifE and was officiated by Prof. Dr. Wong Eng Kiong, Vice President of Student Experience and Entrepreneurship Development (VP SEED).



Assoc. Prof. Dr. Soo Wincci was invited to deliver the leadership talks together with Mr. Noor Anzam Mhd Nor from Group Integrity & Governance of TM. The afternoon session featured Dato' Fazley Yaacob, a celebrity chef and model, who conducted the Image and Etiquette workshop. It is hoped that the event attendees will acquire insightful knowledge not only for enhancing their integrity but also for self-development.

## Sir Geoffrey Vos Shares His Insights on Legal Practices in the Age of Artificial Intelligence

A session with one of the renowned figures in the judiciary, The Right Honourable Sir Geoffrey Vos, Master of the Rolls and Head of Civil Justice in England and Wales was held, at the Dewan Tun Canselor, Cyberjaya campus, on 15 September 2023. Tun Dato' Seri Zaki Tun Azmi, Chancellor of MMU, also graced the occasion with his presence with other honourable dignitaries, namely Dato' Zainal Abidin Putih, Chairman of Telekom Malaysia (TM); Yang Arif Dato' Mary Lim Thiam Suan, Federal Court Judge, as well as Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU.

Sir Geoffrey Vos elaborated on the role of artificial intelligence in the legal industry and also conducted a question-and-answer session with the audience. The sharing session was attended by representatives from the Palace of Justice, law firms, other varsity students, MMU staff, and students. It is hoped that this session will have an immense impact and that the attendees will obtain insightful knowledge, especially the young legal eagles and practitioners.





## FOM Lecturer Takes Centre Stage at 11th Global Waqf Conference in Turkey



Dr. Ridzwan Bakar, a lecturer at FOM, played a significant role at the 11th Global Waqf Conference (GWC) held in Turkey. He was appointed as a Scientific Committee Member for this prestigious annual event, which brought together leaders, policymakers, scholars, and researchers from 26 countries.

The main goal of the conference was to discuss various important issues related to waqf (Islamic endowment), philanthropy, and the Sustainable Development Goals (SDGs). The event took place from 7-9 September 2023, at Ibn Khaldun University and Istanbul Sabahatin Zaim University (IZU) and was

inaugurated by a senior advisor to the President of Turkey. Dr. Ridzwan presented three papers during the conference. One focused on proposed public policy for waqf healthcare in Malaysia, while the other two were academic papers. These papers sparked lively discussions among scholars and practitioners in attendance. In total, more than 50 papers were presented, addressing various critical issues in the field.

This event was unique because it provided a platform for experts and professionals to share their knowledge and ideas on waqf and philanthropy at an international level. It allowed for the establishment of valuable global networks..

## FOL Experts Appointed to JAPA Committee

Ms Rebecca Mathan and Mr. Nor Hisham Nor Hashim, our academic staff from the Faculty of Law (FOL) have been appointed to the 'Jawatankuasa Akta Pembelaan Awam (JAPA)' committee. Bestowed by the distinguished Yang Berhormat Dato' Sri Azalina Othman Said, the Minister in the Prime Minister's Department (Law and Institutional Reforms), the committee is also composed of seven (7) other faculties of law at local universities in Malaysia.

The purpose of establishing JAPA is to conduct studies, generate input, and provide significant findings related to legislative proposals of the Public Defender's Act. The appointment is effective from August 8, 2023, until 15 December 2023. Once again, hearty congratulations on this well-deserved honour, and best wishes for continued success at your appointment!



## Meet and Greet Session with the Chief Justice of Malaysia



The Law Trip Division of the Multimedia University Law Society (MULS) organised a “Tea Session with the Chief Justice of Malaysia” on 25 September 2023, at the Palace of Justice in Putrajaya. A total of seventy-three participants, comprising law students and academics from the Faculty of Law (FOL) participated in the trip.

With the vision of promoting hands-on experience outside the classroom, the visit to the Palace of Justice and the tea session with the Chief Justice aims to provide students with the opportunity to understand the workings of the courts and the judicial system in Malaysia and to enable the students to hear from the Chief Justice about the roles of the Chief Justice and the challenges faced by the Judiciary.

The Right Honourable Tun Tengku Maimun Tuan Mat, the Chief Justice, shared with the audience that this was her first tea session with university students. Hence, MMU has the honour of being the first university to be given the opportunity for a meet and greet session with the current Chief Justice of Malaysia.

Upon arrival, the students were taken on a tour of the Palace of Justice. The students were briefed by officers from the Palace of Justice and were given the opportunity to visit the Court of Appeal, the judge's chambers, and the detention cells within the courts. The students also visited the Judicial Museum located inside the Palace of Justice. The students were then brought to the conference room, where the sharing session and tea session with the Chief Justice of Malaysia took place.

The session was also graced by the presence of Dato' Hasbi binti Hasan, the Chief Registrar of the Federal Court of Malaysia; high-ranking officers of the courts; Prof. Dr. Abdul Mohaimin bin Noordin Ayus, the Dean of the Faculty of Law; Deputy Deans; Advisor to the MULS; Academics; as well as a representative from the Student Lifestyle & Experience Department (STyLE).

The students were briefed on the ways the judiciary is incorporating technology into the daily operations of the legal profession. The students were also enlightened about the Court-2-Classroom (MYC2C) Programme, an initiative by the judiciary that seeks to expand the understanding of school and university students on the organisation as well as the importance of the judicial system in Malaysia.

Yang Amat Arif Tun Tengku Maimun then shared her personal experience working in the judiciary as well as the importance of her role as the Chief Justice in upholding the Federal Constitution and the rule of law. The students were also given the opportunity to engage with the Chief Justice by asking questions and listening to the insights given by the Chief Justice on matters relating to the judicial system as well as the duties, responsibilities, and challenges faced by the Chief Justice of Malaysia.



## FOL Students Emerge as Finalist at the ASEAN Moot 2023

In a resounding affirmation of Multimedia University Special Interest Group (SIG) Mooting's unwavering commitment to legal excellence, we take immense pride in celebrating the well-deserved achievement of the Malaysian team at the prestigious ASEAN Mooting Competition 2023.

The ASEAN team, composed of two of our seasoned mooters, Ms. Ong Wei Ying, and Mr. Aaron Andrew, along with mooters Abby Si Xinyi from Universiti Malaya (UM) and Dhina Dharshan A/L Ganesan from Universiti Kebangsaan Malaysia (UKM). Despite facing formidable opponents from the Philippines, Vietnam, Thailand and Singapore, the entire ASEAN team showcased remarkable legal skills, securing the distinguished title of First Runner-Up. Their stellar abilities were not limited to a single facet; they dominated the preliminary rounds, earning the highest oralist scores and claiming the second highest spot in the combined memorial category.

The triumph of the ASEAN team is not merely a testament to individual brilliance but also exemplifies the collaborative spirit, dedication, and wealth of experience that define the mooting legal community. With a history of participation in numerous competitions, their victory represents the culmination of years of hard work and dedication to the craft. Throughout the competition, their teamwork illuminated the moot courtroom, earning them not only victory but also the respect and admiration of their peers and the broader legal community and more importantly bring the good name of Multimedia University onto international platforms.

MMU expresses gratitude to the coaches and trainers whose expertise and unwavering support, combined with the invaluable experience of the entire team, played a pivotal role in guiding them to success. As SIG revels in the brilliance of this victory, the ASEAN Mooting Competition 2023 stands as a proud moment for the whole Malaysian legal community. The ASEAN team, with their inclusive and collective wealth of experience, has not only brought individual glory but also immense pride to the entire mooting community. Heartfelt congratulations to Ong Wei Ying, Aaron Andrew, Abby Si Xinyi, Dhina Dharshan A/L Ganesan, and the entire ASEAN team for their outstanding performance at the ASEAN Mooting Competition 2023.





## **MMU Team Wins NAMCO 2023**

Team 1002 from the Multimedia University Special Interest Group (SIG) Mooting team unlocked another achievement at the Novice Arbitration Mooting Competition (NAMCO) Mooting Competition 2023, recently. Our dedicated team, comprising Wong Jian Han, Nurin Qistina, Lakkshanya Sivakumar, and Gregory Kong Min Kyn, emerged as the overall champions, marking a significant achievement for our baby mooters in October 2023. Their coaches were Aaron Abishai Andrew and Liveerniesh Ramakrishnan.

In the finals, Wong Jian Han's exemplary performance earned him the prestigious title of Best Oralist, underscoring his eloquence and legal expertise. Additionally, Team MMU was recognised as the best team in the General Rounds, further emphasising their collective prowess in the competition.

This success is a testament to the hard work, dedication, and teamwork exhibited by each member of Team MMU. The rigorous preparation, countless hours of research, and commitment to excellence were evident throughout the competition. The team also extended their heartfelt gratitude to the coaches and alumni trainers, whose invaluable guidance and mentorship played a crucial role in shaping the success of our "baby mooters."

As we celebrate this remarkable victory, we look forward to witnessing the continued success and growth of the SIG Mooting team in future endeavours. The triumph at the NAMCO Mooting Competition 2023 not only reflects the individual talents of our team members but also highlights the collaborative spirit and dedication within the SIG Mooting community.



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## **PARTNERSHIPS FOR THE GOALS**

**"Strengthen the means of implementation and revitalize the global partnership for sustainable development."**

*MMU acknowledges the strength in collaborative endeavours, opting to forge partnerships with global entities through Memoranda of Understanding, joint ventures, and other collaborative structures. By pooling resources and expertise, the university aims to achieve enhanced results while maintaining a commitment to environmental and social responsibility.*

## FOB Builds Up Affiliation and Engagement with Universitas Pakuan



The Faculty of Business (FOB) received a visit from 25 delegate members of Fakultas Ekonomi and Bisnis (FEB) from Universitas Pakuan (UNPAK) at the Melaka campus on 9 January 2023. The delegation consisting of 8 lecturers and 17 students, was led by Dr. Retno Martanti Endah Lestari, the Vice Dean (Academic and Student Affairs) of FEB. Dr. Lye Chun Teck, Dean of FOB extended his warm welcome to the guests together with faculty members Dr. Ng Tuan Hock, Dr. Yeo Sook Fern and Doctor. Siti

Zakiah, Deputy Deans; the programme coordinators and academic staff of FOB. Various activities were conducted throughout the day such as the discussions on the progress and potential collaborations on the next MMU International Student e-Exchange Programme, matching grants and potential research collaborations between FOB and FEB, guest lecture by UNPAK representatives, and the introduction of the MonsoonSIM education platform by FEB, UNPAK.

During the visit, the UNPAK students attended a mental and physical wellness talk, and presented their Final Year Project, together with other FOB students, in the FOB-FEB Final Year Project Colloquium. In the afternoon, a campus tour was also organised. The delegates had the opportunity to visit the MMU Siti Hasmah Digital Library (SHDL), Rimbun Ilmu, CLC lecture hall, and the President's Square before returning to their home country.



## MMU President Participates the World University Presidents' Forum in China

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU was invited to participate in the World University Presidents' Forum in Beijing, China from 30 July until 31 July 2023. The event convened university leaders to exchange

views and perspectives as well as to share practical experiences in dealing with the changes of times to continue building the university.

On top of that, this forum also strengthened cooperation and widened the connection between world leaders in the education field.

Organised by the China Association of Higher Education, Peking University, and Tsinghua University, more than 36 overseas guests from 100 countries and regions participated in the forum such as the United States, Britain, France, Canada, Japan, Singapore, Malaysia, and others.



## Conference Coordinator in Best Diplomats Malaysia Global Conference 2023

Jeffrey Quek Shue Yew, our final year student from the Faculty of Business (FOB) was appointed as Conference Coordinator for Best Diplomats Malaysia – The Diplomatic Simulation by the Board of United Nation (UN) from 27th to 29th January 2023. The conference was held at Sunway Putra Hotel, Kuala Lumpur Malaysia.

With its theme, “Diplomacy Beyond Barriers”, the event was participated by a total of 150 delegates across the world namely from Bangladesh, Burkina Faso, Cameroon, Democratic Republic of Congo, East Timor, Eswatini, Ethiopia, Fiji, Ghana, Grenada, Guinea Conarky, India, Indonesia, Kenya, Malawi, Mozambique, Namibia, Nigeria, Pakistan, Philippines, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Uganda



Uzbekistan, and Zimbabwe. Best delivered to the audience.

Diplomats is a Diplomatic Stimulation Organiser headquartered in New York served as an avenue for leaders of tomorrow to exhibit their speech and diplomatic skill. The conference helped to inculcate the skills of diplomacy, leadership and public policy drafting among aspiring future diplomats. The conference also featured many activities including International Grand Symposium where eminent diplomats and ambassadors

The participants also had the opportunity to do a roleplay as diplomats and representatives during the Diplomatic Sessions, which helped the participants to present and justify their viewpoints and practise their oratory skills. Best Diplomats also arranged a cultural day where the participants wore their cultural dresses and made performances during the closing ceremony.

## FIST Student Represents Malaysia to Global Youth Summit 23 in South Korea



Afiq Danial Mohd Sukri, our student from the Faculty of Information Science and Technology (FIST) was selected to represent Malaysia in the upcoming Global Youth Summit 2023. This programme involves 150 youths coming from 40 countries and it will be held from 19 July until 26 July 2023 at South of Korea.

With its theme, ‘Harmony of Global Youths Towards a Sustainable Future’, the summit serves as a great avenue to establish a platform for youth to build a network for future

Afiq’s journey to the Global Youth Summit is not just a personal achievement but also a source of pride for FIST and Malaysia. His involvement underscores the potential of Malaysian youth to make a significant impact on the global stage. As Afiq prepares for this exciting venture, he carries with him the hopes and aspirations of his nation, ready to contribute his voice and efforts towards a sustainable future for all.



## MMU and Embassy of Iraq Strengthen Bilateral Relationship



On 9 January 2023, MMU received a courtesy visit from Assistant Professor Dr. Ahlam Nehmah Lafta, the Iraqi Cultural Attaché from the Embassy of the Republic of Iraq and Dr. Salah Mahdi Khaleel, the academic advisor at Cyberjaya campus.

The delegation was warmly welcomed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU. He made a brief introduction of the university to the guests. Both parties exchanged views on education matters and explored potential cooperation that could be achieved for the benefit of the university

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## Exploring Academic and Research Collaboration with Firebird of Research in Management

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU received a courtesy visit from Dr. S.K. Sundaraman, Managing Director, and Mrs. Sujana Abirami Sundaraman, Trustee of Firebird of Research in Management on 30 January at Cyberjaya campus.

During the visit, both parties explored the possible engagement that could be conducted in strengthening the bilateral relationship. In 2021, a Memorandum of Agreement (MoA) was signed to open up opportunities for students from Firebird of Research in Management to complete their MBA via credit transfer and micro credentials. The guests were also taken on a campus tour and visited some learning facilities.





On 8 May 2023, Multimedia University (MMU) received a courtesy visit from a delegation from Universiti Teknologi Brunei (UTB) at the Cyberjaya campus. Datin Paduka Professor Dr Dayang Hajah Zohrah Haji Sulaiman, Vice Chancellor of UTB led the delegation and was warmly received by Prof. Dato' Dr. Mazliham Mohd Su'ud, MMU President.

Both varsities had a discussion and explored potential collaborations that could be achieved in terms of academic and research development. The UTB delegation also had the opportunity to tour and visit the learning facilities on campus during the event.

## MMU and UTB Explore Collaboration Opportunities



## Fostering Academic and Cultural Exchanges with Russian Delegation

In supporting the event initiated by the International Collaboration and Engagement (ICE), the Faculty of Business (FOB) had the honour of hosting a delegation from the Moscow State Institute of International Relations (MGIMO), Russia at the Melaka campus on 17 May 2023. Dr. Siti Zakiah Melatu Samsi, Dean of FOB extended a warm welcome to the delegation, consisting of three staff members and six students from MGIMO. Dr. Siti also facilitated a series of engaging activities during the visit. On top of that, Dr. Subhachini Subramaniam delivered a compelling presentation on Malaysia's economic landscape and potential business opportunities. The delegation received a comprehensive

understanding of Malaysia's economic growth, key industries, investment climate, and international collaboration opportunities. An interactive case study discussion was also conducted between MGIML and FOB students during the visit. The case study focused on conducting a PESTEL analysis of a Russian start-up business operating in Malaysia. Through this collaborative activity, the students exchanged

their ideas and applied their knowledge in a practical context. As a result, the students gained a deeper understanding of the external factors influencing business operations as well as the challenges and opportunities faced by foreign businesses entering the Malaysian market. All in all, the visit served as an excellent opportunity to strengthen ties as well as to foster academic and cultural exchanges between the two institutions. It is also becoming a stepping stone towards a future of fruitful academic and research collaborations between FOB and MGIMO.



## MMU and Innopolis University Embark on Collaborative Relationship

Multimedia University (MMU) received a visit from a delegation from Innopolis University, Russia at the Cyberjaya campus on 1 March 2023. Led by its director, Mr. Kirill Semenikhiri, the visit aimed at building new collaboration and cooperation between two varsities. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU welcomed and briefed the delegation on the MMU's development.

Both parties also exchanged views and explored possibilities in pursuing strategic partnership and relationship, which includes academic, research development, and other related areas



## MMU and Al-Quds University Forge Collaboration and Partnership

A Memorandum of Understanding (MoU) was inked between Multimedia University (MMU) and Al-Quds University at the Cyberjaya campus on 29 March 2023. Signing on behalf of the university was Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Prof. Hasan Dweik, Executive Vice President, who represented the President of Al-Quds University via hybrid mode.

The ceremony was witnessed by Honorable Dr. Basri Saleh, Deputy Minister of Higher Education, State of Palestine and His Excellency Walid A.M Abuali, Ambassador of the State of Palestine to Malaysia. The pact will allow both varsities to work together in terms of academic and research initiatives that could benefit the university community as a whole.





## MMU & MACEE Explore Potential Collaboration



Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU received a visit from Malaysian – American Commission on Educational Exchange (MACEE), led by its Executive Director, Mr. Curtis Johnson, and his delegation at the Cyberjaya campus on 23 May 2023. Prof. Dato' Dr. Mazliham briefed about the university to the guests, and they also discussed on the possible collaboration that could be achieved between the two institutions.

## FOB Students Participate in the 2023 Southeast Asia Youth Summit

Two students from the Faculty of Business (FOB) namely Jeffrey Quek Shue Yew and Aw Jie Zhi were nominated and selected to participate in the 2023 Southeast Asia Youth Summit that was held on 27 May 2023 at Asia School of Business in Kuala Lumpur. The summit gathered youths from Southeast Asia to attend the Sustainability Forum with representation from the government, academia, private sector, and non-profit organisations.

The event aimed to collectively seek sustainable solutions to environmental issues and initiate conversations related to sustainability. The forum featured three rounds of panel discussions with various interesting topics: “Sustainable Living: Strategies and Opportunities for Tomorrow’s Trends”, “From Rhetoric to Action: Social Sustainability in Businesses and Organizations” and “Sustainable Future: Youth Participation in Environmental Governance, and Decision Making” were conducted during the event. Among invited speakers were H.E Brian D.



McFeeters, U.S. Ambassador to Malaysia; Ms. Anni STahle, Deputy Head of Mission of Finland Embassy and other prominent speakers.

Jeffrey and Jie Zhi also partook in a Sustainable Project Management Training Programme, where they were exposed to knowledge and skills in sustainability practice in project management. This three-hour marathon training helped to inspire the students to start planning and implementing sustainable initiatives for social impact reforms and sustainable strategies.

## FET Hosts Student Exchange Program for Naresuan University Thailand

The Faculty of Engineering and Technology (FET) received a visit from 18 students and 6 academic members from Naresuan University (NU), Thailand in Melaka recently. It has been the norm for staff and students from both universities to take turns visiting each other since the signing of the MoU in 2017. The program serves as an avenue for the delegates to expand their network and to learn different types of ongoing research at the international level. Besides, the delegates also get the chance to gain cultural experiences from the program activities. The main highlight of



the program was the workshop topics on Malaysian traditions and cultures. The participants were introduced to a variety of local and traditional games, clothing, cooking, languages, and many more. Apart from those activities, the participants were brought around for Melaka City Tour, where they learned more about Melaka as a historical city in Malaysia. Several meaningful historical places such as the A-Famosa, St. Paul Hill, Red Square, and others. Besides wandering around Melaka City, the delegates also visited Kuala Lumpur, to visit the iconic Petronas Twin Towers, Putrajaya Prime Minister Office, Dataran Merdeka, and many more. It is hoped that the programme will incite more collaboration and networking in research and education between two varsities in the future.



## UNPAK and MMU Strengthen their Collaborative Ties

A group of 7 representatives from the Faculty of Economics & Business at Universitas Pakuan Indonesia (UNPAK) paid a visit to the Faculty of Business (FOB) at the Melaka campus on 6 July 2023. The visit honours the longstanding partnership to foster collaboration and enhance the existing relationship between the two institutions.

Led by Dr. Hendro Sasongko, Ak., MM., CA, its Dean, the delegation received a warm welcome from Dr. Zakiah Melatu Samsi, Dean of FOB, who also provided an overview of the recent accomplishments of the faculty and shared inspiring



success stories of MMU alumni. A fruitful discussion on several key areas of collaboration was also held during the visit. It includes opportunities for joint book chapter projects among lecturers, international webinars, educational trips, and the renewal of the Memorandum of Understanding (MoU) in 2023. The guests were taken on a tour of on-campus facilities including Siti Hasmah Digital Library, Rimbun Ilmu, CLC Concourse, and President Square. Through this visit, it is hoped that the relationship between MMU and UNPAK would be strengthened and collaborate for future engagements in the near future.



## 6 MMU Students Participate as Conference Coordinator in Best Diplomats Malaysia Global July Conference 2023

Our students namely Jeffrey Quek Shue Yew from the Faculty of Business (FOB), Aw Jie Zhi (FOB), Tan Sze Min (FOB), Ng Jin Yang (Faculty of Information, Science & Technology), Lim Kai En (FIST), and Nur Maisarah Mohammad Saifrol (FIST) were selected as Malaysian Team Coordinators for Best Diplomats Malaysia 2.0 – The Diplomatic Simulation of the United Nations. The programme took place from 13 until 16 July 2023 at Sunway Putra Hotel in Kuala Lumpur.

Our students had the opportunity to participate in interactive sessions, tackling modern challenges and developing resolutions to combat critical issues. Organised by Best Diplomats LLC, a New York-based United Nations Simulation, this conference gathered 150 delegates from various countries including Bangladesh, Burkina Faso, Cameroon, Democratic Republic of Congo, East Timor, Eswatini, Ethiopia, Fiji, Ghana, Grenada, Guinea Conarky, India, Indonesia

Kenya, Malawi, Mozambique, Namibia, Nigeria, Pakistan, Philippines, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Uganda, Uzbekistan, and Zimbabwe. On top of that, Prof. Dr. Elsadiq Musa Ahmed, our academic staff from the Faculty of Business (FOB) was invited to the keynote speaker at the event. With the title of 'Youth Empowerment and Challenges Brought by the Industrial Revolution 4.0 Era, Prof. Elsadiq shared his perspective with the audience. Beyond his academic brilliance, Prof. Elsadiq's humility and approachable demeanor further endeared him to the attendees. He engaged in meaningful discussions with participants, providing valuable advice and guidance to young minds eager to make a difference in the face of this new revolution. The impact of his address will undoubtedly be felt for years to come as young diplomats and future leaders embark on the journey of navigating the technological age with confidence and foresight.



## MMU and UWKS Ink Pact for Academic & Research Initiatives

Multimedia University (MMU) and Universitas Wijaya Kusuma Surabaya (UWKS), Indonesia officially inked a Memorandum of Understanding (MoU) on 20 July 2023 at the Cyberjaya campus. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Prof. Dr. H. Widodo Ario Kentjono, Rector of UWKS. Through this cooperation agreement, MMU and UWKS would engage with collaborative engagement that would benefit the university community in terms of academic and research initiatives including exchange programmes, joint-degree programme, joint research and matching grants.



In strengthening the bond between MMU and La Rochelle University, a Memorandum of Understanding (MoU) signing ceremony was held at the Cyberjaya campus on 27 July 2023. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Prof. Dr. Jean-Marc Ogier, President of La Rochelle University. The ceremony was also graced by the presence of His Excellency Axel Cruau, Ambassador of France to Malaysia.

The partnership will focus on exchange programme, articulation,

joint degree programme, postgraduate programme, joint research and matching grant. La Rochelle University is a French public university which offers programme in French Language, Literature, Communication Studies, Business Administration, Economics, Finance, Legal Studies, Health Sciences, Computer Sciences, Natural Sciences, and Exact Sciences. It is hoped that the collaboration between these two varsities would help elevate the academic and research initiatives for the university community's benefit.

**MMU, La Rochelle University Seal MoU for Academic and Research Cooperation**



## MMU President Delivers a Speech in China

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, was invited to deliver a speech on "Wisdom in Digital, Harmony in Diversity – The Malaysian Way" at the China-ASEAN

University Presidents Forum on 29 August 2023. Prof. Dato' Mazliham shared how MMU plays its role in achieving its goals to nurture future digital leaders. In his speech, he also talked about the success of our prominent Permata Dunia, or alumni, who are leading the industry. Through this event, China and ASEAN countries have established a digital education alliance to boost the digital transformation of education. This alliance would aim to deepen educational cooperation, which would promote the development of the countries & create a brighter future.



## Broadening Horizons and Building Network via Global Youth Summit 2023

In July 2023, Afiq Danial Mohd Sukri from the Faculty of Information Science and Technology (FIST) together with Jaya Sri Seegar from Universiti Malaysia Kelantan, and Ong Yue Lin, a distinguished graduate of STPM SMJK (C) Katholik PJ represented Malaysia in the Global Youth Summit 2023 in South of Korea. Hosted by the Ministry of Gender Equality and Family (MOGEF) of South Korea, the event was organised by the

National Council of Youth Organizations in Korea (NCYOK) in partnership with the Korean Educational Psychology Association (KEPA), nearly 150 young leaders from almost 50 different countries around the world to collaboratively address global challenges under the theme of "Harmony of Global Youths Towards a Sustainable Future". Throughout the summit, these exceptional youth leaders engaged in lively discussions,

exchanged innovative ideas, and collaborated with their international peers. Their collective efforts not only addressed pressing global challenges but also exemplified Malaysia's dedication to fostering a culture of positive change and youth empowerment. The Global Youth Summit provided a unique platform for the youth to connect and deepen their understanding of global issues, and contribute to a more sustainable world.





## MMU & MACEE Signed MoU to Strengthen Academic Cooperation



Multimedia University (MMU) and The Malaysian-American Commission on Educational Exchange (MACEE) inked a Memorandum of Understanding (MoU) to foster academic exchange opportunities between Malaysia and the United States. The signing ceremony was held at the Dewan Za'ba, Ministry of Higher Education (MoHE) in Putrajaya on 10 August 2023.

Dato' Seri Abdul Razak Jaafar, Secretary General of the Ministry of Higher Education officiated the ceremony and the pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Mr. Curtis Johnson, Executive Director of MACEE. The pact signifies the commitment of both parties to create educational opportunities for the benefit of the students and academics. It also forges stronger ties to the prestigious Fulbright Program and the U.S. higher education system.

On top of that, more collaborative engagement would be implemented in terms of academic exchange, research collaborations and joint programmes. The cooperation between both institutions will definitely bolster the relationship and move together in achieving the goal.

## Faculty Hosting a Fulbright Specialist

The Faculty of Engineering (FOE) is honoured to host Dr. Satish E. Viswanath, an Associate Professor from the Department of Biomedical Engineering, Case Western Reserve University, USA under the Fulbright Specialist Program (FSP) from 10 to 25 August 2023. Dr. Viswanath is stationed at the Artificial Intelligence for Digital Pathology (AI4DP) research lab, headed by Prof. Mohammad Faizal Ahmad Fauzi, where he will be carrying out research and discussions, delivering seminars and workshop, as well as sharing his experience in steering high productivity and self-sustainable research labs.

Dr. Satish Viswanath is an expert in developing novel medical

image analysis and machine learning tools for imaging data, through spatial correlation and cross-linking against pathology or molecular data. Applications of his tools are being examined in: (a) decision support for treatment (e.g., choice of therapy), (b) targeting therapeutic procedures (e.g., guiding ablation, radiotherapy, surgery), and (c) biological quantitation for treatment response characterization in vivo.

This multidisciplinary, multi-pronged approach is being applied to colorectal, renal, and prostate cancers, as well as digestive diseases. The Fulbright Specialist Programme, part of the larger Fulbright Program, was established in 2001 by the U.S.

Department of State, Bureau of Educational and Cultural Affairs (ECA). The FSP provides highly qualified U.S. academics and U.S. professionals whose credentials and experience are at the faculty or full professional level with an opportunity to share their expertise by carrying out projects requested by host institutions abroad. The programme is a field-driven initiative, conceptualisation and designing projects of interest within an eligible discipline that represents a priority for the host institution.





## MMU, Datasonic Seal the MOU to Establish Strategic Alliance in Academic & Research Initiatives

On 17 August 2023, Multimedia University (MMU) and Datasonic Group Berhad formalised the cooperation and collaboration through a Memorandum of Understanding (MoU) signing ceremony in Kuala Lumpur. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President / Chief Executive Officer (CEO) of MMU and Datuk Abu Hanifah Noordin, President/ CEO of Datasonic Group Berhad, witnessed by Prof Ir. Wong Hin Yong



Vice President of Academic and Innovative Learning (AIR) and Mr. Chia Kok Khuang, Executive Director of Datasonic. This alliance provides opportunities for both institutions to share their experiences, technologies, and resources to promote academic excellence and research initiatives. Under the MoU, MMU and Datasonic would implement educational and research cooperation programmes including the establishment of a Metaverse R&D Lab at MMU, the formation of joint group in Digital ID, AI & Metaverse, internship & career opportunities, financial assistance, upskilling and reskilling programme and other collaborative engagements that would benefit both parties.

## FOE Student Partakes in the eMpowering Youth Across Asean Programme

Lim Min Ying, a student from the Faculty of Engineering (FOE), was selected as a Malaysian representative out of 2000+ applicants to volunteer in the eMpowering Youth Across Asean (EYAA) Cohort 3 from 23 July to 11 August 2023.



EYAA is a programme that aspires to lead the charge for sustained and positive impacts in communities that Maybank operates in through a strategic partnership with the ASEAN Foundation. Launched in 2018, the programme engages talented youth aged 19 to 35 across the ten ASEAN Member States to develop and implement community projects that will deliver tangible long-term social and economic impact in selected community sites.

A total of 120 ASEAN Youth Volunteers took part in the EYAA Cohort 3. Min was appointed to Project Tenun in Belu, working closely with 9 other Youth Volunteers from 9 ASEAN countries under the management of the Civil Social Organisation, Insan Bumi Mandiri. This project aims to empower 30 women weavers in Belu, Indonesia to be economically stronger by producing innovative, high-quality Tenun fabrics. A series of capacity-building programmes related to Tenun production, including workshops about the arts, social media and English literacy were conducted during the project period. They were also welcomed by the Regent of the Regional National Craft Council of Belu, Dr. Agustinus Taolin. Besides the workshops, Min was actively involved in the cultural understanding of the local community, including a visit to SMK Kusuma Belu, Duarato, Fulan Fehan, and Atapupu where she interacted extensively with the locals to learn about their traditions and challenges.

## MMU Students Participate as Conference Committee in AYIMUN 2023



Our students, namely Lim Min Ying from the Faculty of Engineering (FOE), Abimanyu Sivasankar from the Faculty of Computing & Informatics (FCI), Nur Maisarah Mohd Saifrol from the Faculty of Information Science & Technology (FIST), and alumni Shahril Nizam from the Faculty of Engineering (FOE), were selected as Malaysian Team Committee for Asia Youth International Model United Nations (AYIMUN) – International Political Instability: Preventing The World from Global Threats. The conference took place from 12-15 August at the Berjaya Times Square Hotel, Kuala Lumpur. This conference recorded the

participation of more than 424 delegates from 39 countries around the world, including Azerbaijan, Canada, Egypt, India, Korea, Mexico, Morocco, Myanmar, Nepal, Uganda, Uzbekistan, and Vietnam. AYIMUN was also attended by The Charge D' Affaires of The Embassy of the Republic of Guinea, His Excellency Sir Oumar Condé, and The Ambassador of The Oriental Republic of Uruguay, Her Excellency Madam Valeria Csukasi. AYIMUN is a platform where youths' mentalities in leadership, negotiation, and diplomacy will be developed in a Model United Nations.

It aims to facilitate young leaders from different places to broaden their networks and provide a platform to share their perspectives, particularly on peace and security. Min and Shahril were chosen to be the Master of the Ceremony (MC) for the conference at the Opening and Closing ceremonies. Abimanyu and Maisarah helped to coordinate the MUN sessions for five councils; UNICEF, INTERPOL, UNESCO, IMF and WHO, covering the topics of Protection for Children in War and Conflicted Areas, Combating The Rise of Terrorism Activity, Reducing Gender Discrimination and Inequality, Addressing the Increase of Global Economic Downturn to Attain Post Pandemic Stability and Resilience and Sustainability in Establishing Health System.

## MMU Formalises Mou with Filamen to Empower Students through Digital Art



A Memorandum of Understanding (MoU) was inked between Multimedia University (MMU) and Filamen Sdn. Bhd. at the Cyberjaya campus on 9 October 2023. Signing the pact were Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Mr. Abdul Shakir Abu Samah, Co-founder of Filamen. The ceremony was also attended by Mr. Fariz Hanapiah, Co-founder of Filamen, who is also our Permata Dunia.

This pact between MMU and Filamen underscores the importance of collaborative scope in Digital Art, namely joint research & exhibition, internship, industry curriculum embedment of contents, joint research grants, professional training, and industry cadetship.



## A Visit Focuses on Collaboration and Understanding



On 13 September 2023, the Faculty of Business (FOB) had the distinct privilege of welcoming a delegation from Universitas Internasional Indonesia (IIIU) at the Melaka campus. This significant occasion marked IIIU's inaugural visit to a Malaysian university, and MMU was honoured to be the first host for IIIU delegates. Led by Dr. Ugi Suharto, the IIIU representatives were warmly received by Dr. Siti Zakiah Melatu Samsi, FOB's Dean, along with deputy deans and staff members. The meeting centred around discussions regarding potential research collaborations, IIIU's postgraduate scholarships, and the possibility of organising guest lectures. Following the meeting, the IIIU delegates had the opportunity to explore the vibrant campus of MMU in Melaka.

## MMU Receives a Visit from Universitas Tamarunagara (UNTAR)

A delegation from Universitas Tamarunagara (UNTAR) paid a visit to MMU's Cyberjaya campus on 21 September 2023. The delegation was warmly received by Prof. Ir. Dr. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoints (VP MEET), along with other MMU representatives, including Prof. Ir. Dr. Zulfadzli Yusoff, Director of Research Management Centre, and Dr. Abdul Aziz Ahmad, Director of International Collaboration and Engagement (ICE). Leading the UNTAR delegation was Prof. Dr. Ir. Agustinus Purna Irawan, the Rector of UNTAR, together with his officers and two students.

During the visit, both MMU and UNTAR engaged in productive discussions aimed at expanding their collaborative efforts. The agenda encompassed two primary areas of focus. Firstly, they explored the development of a student mobility programme designed to facilitate academic exchanges. This initiative offers students from MMU and UNTAR valuable cross-cultural learning experiences. Additionally, the delegation investigated the potential for joint research ventures, making the most of the combined expertise and resources of both institutions.



## Fostering Collaborative Connection and Relationship with Universitas Telkom

The Faculty of Business (FOB) warmly welcomed a delegation of 11 representatives from Universitas Telkom, Indonesia, on 27 September 2023. Headed by Dr. Anita Silvianita, a total of 10 MBA students participated in this visit. Their arrival was graciously acknowledged and hosted by Dr. Siti Zakiah Melatu Samsi, the esteemed dean of the Faculty of Business.

The purpose of this visit was to provide the visiting delegates with a comprehensive understanding of the ongoing and forthcoming strategies implemented within the Faculty of Business (FOB). A structured presentation was delivered, elucidating the current strategic direction and future initiatives of the FOB. Integral to the visit were profound discussions on potential research collaborations and outbound activities.



Notably, a significant highlight of the visit was a lecture series entitled “Navigating the Global Business Landscape: Insights from the Research Context” which was presented by Dr. Yeo Sook Fern, the deputy dean of research and industrial collaboration, and a mini colloquium in which the 10 MBA students from Universitas Telkom presented their ongoing research proposals, a pivotal aspect of their MBA programme. This session evolved into a fruitful exchange of ideas and insights, enriching the students’ perspectives and offering diverse approaches to enhance their thesis writing.

## MMU and UTAR Formalise Educational Cooperation

On 9 October 2023, Multimedia University (MMU) and Universiti Tunku Abdul Rahman (UTAR) formalised their cooperation in academic and research development through a Memorandum of Understanding (MoU) at the Cyberjaya campus. This agreement builds upon their previous collaboration in 2010.

Prof. Dato’ Dr. Mazliham Mohd Su’ud, President of MMU and Ir. Prof. Dato’ Dr. Ewe Hong Tat, President of UTAR represented their respective universities as the signatories of the MoU.



This cooperation would create a comprehensive educational experience for both institutions where, it focuses on several engagements including joint research, student internship, talent training programme, industrial-linked projects, joint proposal of research grants, academic development exchanges, student mobility programme, and joint supervision for master and doctoral programmes.



## FOB Students Showcase Their Innovative Solutions



A total of 183 diploma students from the Faculty of Business (FOB), who were enrolled in the Innovation and Design Thinking course participated in the iNVENTX, formerly known as RICES, recently. This exhibition goes beyond MMU, providing a platform for staff, researchers, and students from various universities and the wider public to present their innovative ideas and inventions. Under the guidance of Mr. Vincent Chan and Ms. Siti Zarifah, the students planned and prepared their submissions in just a month. This exhibition includes five primary invention categories: Computing and Informatics, Engineering and Industrial Design, Digital Creative and Cinematic Arts, Education and Social Science, and Sustainable Development Goals (SDGs).

As they progressed in the exhibition, apparently, they applied design thinking to think outside the box and come up with innovative solutions to problems. The students also bagged gold, silver and bronze medals during the event.

By joining this exhibition, they were exposed to a valuable networking opportunity to engage with professionals in academia, industry, and government worldwide. Engaging with like-minded individuals and collaborating with participants from diverse backgrounds has further fueled their motivation to exchange ideas and perspectives on the challenges faced by the community and ignited their creativity in developing innovative solutions.

## MMU & ZTE Launch NexGen Communication Engineering Hub

On 17 October 2023, Yang Berhormat Puan Teo Nie Ching, Deputy Minister of the Ministry of Communications and Digital launched the MMU NexGen Communication Engineering Hub at the Cyberjaya campus. The ceremony was also attended by Dato' Zainal Abidin Putih, Chairman of Telekom Malaysia (TM); Mr. Gu Junying, Executive Vice President of ZTE; Mr. Shamsul Izhan Abdul Majid, Chief Technology and Innovation Officer (CTIO), Malaysian Communications and Multimedia Commission



(MCMC), Datuk Ahmad Zaki Zahid, Chief Strategic Officer of Digital Nasional Berhad (DNB) and other distinguished guests.

This initiative represents a pioneering collaboration and strategic partnership between MMU and renowned telecommunication technology provider, ZTE Corporation. Both parties started the partnership in

2016, and the university has received full support in terms of lab and facilities, scholarships, and others. Assoc. Prof. Dr. Ooi Chee Pun, Dean of the Faculty of Engineering (FOE) presented on the NexGen Communication Engineering Hub during the event.

On 3 October 2023, the Faculty of Business (FOB) extended a warm welcome to Professor Dr. Thomas Burkhardt from the University of Koblenz, Germany. Professor Dr. Thomas received a cordial reception from Dr. Siti Zakiah Melatu Samsi, the Dean of the Faculty of Business, in the presence of deputy deans, heads of departments, and lecturers. Substantive discussions transpired between the two institutions, focusing on the prospects of fostering collaboration in research, student exchanges, and academic interactions, among other areas.

During these deliberations, both parties engaged in the exchange of ideas aimed at fostering a deeper understanding and bridging the gaps between Asian and European perspectives in the realms of education, research, culture, and society. This visit marked a pivotal milestone in elevating the international profile of both universities and fortifying global partnerships, with a shared vision of contributing to a more promising future.

## FOB Receives a Special Visit by Prof. Dr. Thomas Burkhardt



## MMU and ZTE Corporation Enhance Academic and Technological Partnerships

A delegation from ZTE Corporation, a global leader in telecommunications and information technology, visited Multimedia University (MMU) to enhance collaborative efforts and academic connections on 22 September 2023. The meeting, facilitated by representatives from both organisations, was marked by constructive discussions.

The visit began with a warm welcome by Campus Director Prof. Wong, who introduced MMU and its achievements. Faculty members then

provided an overview of the Faculty of Engineering and Technology (FET), showcasing ZTE labs and initiatives and discussing future academic programmes, student and alumni activities, and adjunct professorship opportunities. ZTE representatives shared their insights, underscoring their perspective on collaboration. The exchange of gifts signified a strengthening relationship, and a tour of the ZTE lab allowed both parties to explore potential collaborations. The visit concluded positively, reinforcing the partnership between ZTE Corporation and Multimedia University and promising advancements in technological education and research.





## MMU Forms Strategic Alliance with Innopolis University

Multimedia University (MMU) and Innopolis University have reinforced the strategic alliance through a Memorandum of Understanding (MoU) signing ceremony in Putrajaya on 24 October 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Dr. Kirill Semenikhin, Director of Innopolis University signed the pact and exchanged the document, which was witnessed by YB Datuk Seri Mohamed Khaled Nordin, Minister of Higher Education (MOHE). The pact aimed to boost



educational and research cooperation for the benefit of both varsities. The ceremony also witnessed other local and private Malaysian universities together with universities from Tatarstan in establishing strategic partnerships in several fields. Among other attendees were Prof. Dr. Ir. Hairul Azhar Abdul Rashid, Vice President of Market Exploration, Engagement and Touchpoint (MEET), Dr. Roopesh Sitharan, Deputy Director of International Collaboration and Engagement (ICE) and other officers.

## MMU's Expertise Transforms SIMATS Education Landscape



Esteemed educators from Multimedia University (MMU) collaborated with Saveetha Institute of Medical and Technical Sciences (SIMATS) in Chennai, India, recently. A total of five academic staff namely Ts. Dr. Anusuyah Subbarao from the Faculty of Management (FOM), Ms. Nur Iylia Syafiqah Binti Abdul Malik from the Faculty of Business (FOB), Dr. Siow Chun Lim from the Faculty of Engineering (FOE), Dr. Abdullah Al Mamun Sarwar (FOM), and Dr. Liew Tze Wei (FOB), joined forces with SIMATS and other universities, injecting fresh perspectives into classrooms.

The collaboration, facilitated by MMU's International Collaboration and Engagement (ICE) unit, saw the exchange of knowledge, expertise, and experiences between these esteemed

educators. During their stay, the lecturers engaged in co-teaching programmes, energising students with dynamic teaching methods. This collaboration resulted in a vibrant academic environment, leaving a lasting impression on SIMATS' educational landscape. The partnership highlights the value of global collaborations in shaping education and fostering future leaders.

As a testament to the success of this partnership, both MMU and SIMATS express their commitment to continuing such initiatives. The shared goal is to create a legacy of educational excellence, inspiring students and educators alike, while strengthening international ties and promoting a global perspective within the academic community.



## MMU President Speaks at Malaysia-France Convention on Higher Education, Research and Innovation

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU was invited as one of the panelists at the Malaysia – France Convention on Higher Education, Research and Innovation on 18 October 2023 at AC Hotel Kuala Lumpur. In a session titled "Training Tomorrow's Young Talents: Success Stories and Preparing the Future", Prof. Dato' Dr. Mazliham enlightened the conference participants with the university's initiative in bridging the link between academia and industry through the implementation of Industry Cadetship (iCadet) and Entrepreneur Cadetship (eCadet).

Organised by the Embassy of France with the support of the Ministry of Higher Education (MOHE) from 18 October until 20 October 2023, this conference aims at strengthening the dialogue and cooperation between all stakeholders (government, universities, NGOs, companies) and fostering the emergence of new partnerships in strategic domains. It also offers a great platform to showcase successful bilateral training, research, and university-company collaborations.



## MMU Inks MoU & MoA with 9 Partner Universities to Reinforce Joint Research Collaboration

Multimedia University (MMU) inked the Memorandum of Understanding (MoU) and Memorandum of Agreement (MoA) in a virtual signing ceremony on 20 October 2023. The involved parties were Telkom University, University of Hertfordshire, Naresuan University, Foshan University, Sethu Institute of Technology, Vellore Institute of Technology, Universitas Kristen Duta Wacana, and University of Science and Technology Chittagong.

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU signed the document together with the leaders and representatives of the partner universities during the event. This ceremony marks a significant milestone for higher education institutions to establish fruitful collaboration in research. In his speech, Prof. Dato' Dr. Mazliham emphasised the importance of research collaborations, which allow the exchange of ideas and harness collective strengths to address the most pressing issues. Prof. Dato' also congratulated 37 research project teams for securing the joint matching grant.





## MMU and Bauman Moscow State Technical University Ink Pact to Foster Academic and Research Cooperation

A memorandum of cooperation (MoC) was inked between Multimedia University (MMU) and Bauman Moscow State Technical University at the Grand Banquet Hall, UTM Hotel & Residence, Kuala Lumpur on 9 November 2023. The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU, and Prof. M.V. Gordin, Rector of Bauman Moscow State Technical University. The MoC exchange ceremony was witnessed by YB Datuk Seri Mohamed Khaled Nordin, Minister of Higher Education (MoHE).

This ceremony was held in conjunction with the 2nd Meeting of the Joint Malaysia-Russia Commission for Economic, Scientific, Technical and Cultural Cooperation. The signing ceremony also involved other Malaysian and Russian universities and organisations. The collaboration between these two higher education institutions will cover activities related to academic exchange, joint educational programmes, seminars, conferences, and many others. Through this formalised cooperation, it is hoped that both parties would be able to

soar together and bring great impact to the university communities as a whole.



## FOM Student Represents Malaysia in IVCO 2023

Nur Akma Nazihah Shahnaz Akhtar, our student from the Faculty of Management (FOM) was selected to represent Malaysia and Multimedia University (MMU) as a youth delegate at the International Volunteer Cooperation Organisation (IVCO) 2023 in Kuala Lumpur, recently. Hosted by Yayasan Sukarelawan Siswa (YSS), a total of 150 delegates from 53 countries and various organisations convened to explore the future of youth involvement in empowering volunteerism. The event was officiated by YB Datuk Aaron Ago Dagang, the Minister of National Unity and it was also graced by the presence of His Royal Highness Tuanku Syed Faizuddin Putra Ibni Tuanku Syed Sirajuddin Jamalullail, The Crown

Prince of Perlis, who delivered the opening keynote on the first day. With the theme 'A New Generation of Volunteers as Changemakers,' the four-day event served as a global platform for collaboration and dialogue on the impactful role of youth in volunteer efforts.

The conference covered diverse topics, including retaining volunteers, diversifying funds for volunteer projects, decolonizing power, voluntourism, integrating AI into project execution, climate change action, and the highlight-KL Call to Action, emphasizing empowering youth and holding them accountable. These discussions culminated in a policy crafting session during the conference's final day in October 2023.





## Exploring Cultural Bonds via ZOOM Jakarta 2023



A group of students from Multimedia University (MMU) and Universitas Multimedia Nusantara (UMN), Indonesia participated in ZOOM Jakarta: Outbound Mobility Programme on Cultural Tourism 2023 from 26 October until 6 November 2023. The event was jointly organised by Kelab Sekretariat Rakan Muda MMU and UMN English Student Council. The programme featured diverse activities, including Bahasa Malaysia and Bahasa Indonesia workshops, enticing cooking demonstrations of both Indonesian and Malaysian dishes, Pesta Bintang Nusantara, a heartwarming corporate social activity involving batik handcrafting at Desa Kemuning, and an insightful visit to Taman Mini Indah Indonesia. The cultural exchange program aimed to foster a deeper understanding between the two nations, encouraging cross-cultural learning and friendship.

The Bahasa workshops allowed students to immerse themselves in the linguistic nuances of both Malaysia and Indonesia, while the cooking demonstrations provided a delightful exploration of culinary traditions. A highlight of the

program was the corporate social responsibility (CSR) activity at Desa Kemuning, where students engaged in the intricate art of batik handcrafting, connecting with the local community, and contributing to the preservation of traditional crafts.

“Pesta Bintang Nusantara” emerged as the cultural crescendo of the program, where traditional performances unfolded in a mesmerising exchange of arts between the participants. This showcase of talent not only celebrated the rich cultural tapestry of both nations but also fostered a deeper appreciation for the diversity of artistic expressions. The rhythmic beats, vibrant colours, and graceful movements on display during this cultural gala exemplified the essence of cross-cultural understanding through the universal language of arts. Students, adorned in traditional attire, showcased the beauty and uniqueness of their respective cultures, creating an atmosphere of unity and mutual respect. The exploration of Taman Mini Indah Indonesia added another layer to the cultural immersion, offering insights into the rich heritage and diversity of Indonesia.

Every moment of this cross-cultural journey resonated with the vibrancy of shared experiences, deepening bonds between the students and reinforcing the importance of cultural exchange. The collaborative efforts of MMU and UMN in organising this programme underscore the significance of international partnerships in education.



## MMU and UNPAK Join Hands for Cultural Exchange and Collaborative Endeavours

The Faculty of Business (FOB) hosted a delegation comprising six distinguished representatives from Universitas Pakuan (UNPAK), Indonesia on 23 November 2023. This delegation was led by Dr. Henny Suharyati, esteemed Dean of the Faculty of Social and Cultural Sciences, accompanied by Dr. Retno Martanti Endah Lestari, Vice Dean for Academic and Student Affairs from the Faculty of Economics and Business, as well as Mr. Muslim, Vice Dean for Academic and Student Affairs from the Faculty of Social and Cultural Sciences. Additionally, three students from UNPAK, Indonesia, were honored participants within this esteemed delegation. The arrival of the delegation was warmly welcomed by Dr. Siti Zakiah Melatu Samsi, the Dean of the Faculty of Business, along with all deputy deans of FOB. Notable attendees included Dr. Tengku Shahraniza Tengku Abdul Jalal and Mr. Hairul Anuar Razak from the Learning Institute for Empowerment (LiE) were also invited to attend the session. The proceedings commenced with a detailed presentation by the FOB, highlighting its ongoing endeavours and future initiatives.

Subsequent dialogues ensued among representatives from the Faculty of Business, the Faculty of Economics and Business, and the Faculty of Social and Cultural Sciences. These discussions encompassed collaborative publication endeavours, considerations regarding book chapters, the formulation of a Memorandum of Understanding (MoU) between MMU and UNPAK, and an invitation extended by FOB for UNPAK's participation in the 3rd International Student e-Exchange Programme 2023, set to commence in December 2023.

Following the insightful discussions, the UNPAK delegates were treated to an extensive campus tour, which showcased various departments, including SHDL, Rimbun Ilmu, and CLC. The day culminated with a group photograph capturing the memorable occasion at the President's Square.



## FOM DBA Student Presents His Research Findings at GIVS2023

Mr. Max Wong Wai Khuen, a Doctor of Business Administration (DBA) postgraduate student at the Faculty of Management (FOM) presented his research findings at the recently concluded IAFOR Global Innovation and Value Summit 2023 (GIVS2023) on



17 November 2023. The programme was jointly organised by the Environmental, Social, and Governance (ESG)- Integration Research and Education Center at Osaka University and the Value Research Center of Doshisha University, Japan. From April to July 2023, Mr. Max collaborated with Professor Philip Sugai from Doshisha University in Kyoto to develop an innovative corporate ESG measurement methodology during his research attachment. This research attachment is a pivotal part of his DBA thesis focusing on ESG development in Malaysia. This significant partnership marks a notable milestone between MMU in Malaysia and Doshisha University in Japan. Both universities hold the distinction of being among the oldest private educational institutions in their respective countries to engage in such academic collaborations. Under the guidance of his FOM supervisors, Dr. Teh Boon Heng and Associate Professor Dr. Tan Siow Hooi, Max Wong successfully demonstrated his newly developed value creation measurement tool, allowing stakeholders to assess how much value an organisation creates for its stakeholders based on available sustainability reports. This development also served as a stepping stone for other researchers to explore the creation of an AI scoring model (using AI to measure ESG performance) and impact-weighted accounting (the creation of financial accounts that reflect a company's ESG performance).

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## MMU and Nanning University Explore Collaboration Opportunities

A delegation from Nanning University, China made a visit to Multimedia University, Cyberjaya campus on 22 November 2023. Led by its President, Dr. Li Dong Xue, the guests were warmly welcomed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU. During the visit, both institutions exchanged views and explored collaboration including postgraduate programmes, mobility programmes and research & innovation initiatives. The guests also



had the opportunity to visit on campus facilities and faculties. This visit has created an avenue to establish new collaboration and cooperation and has brought MMU and Nanning University to achieve remarkable things together.



## MMU,UNPAK Strengthen Relationship & Collaboration

The Faculty of Law (FOL) received a delegation from the Faculty of Law, Pakuan University (UNPAK), Bogor, Indonesia on 22nd November 2023. The delegation of 16 guests, consisting of academic staff and student representatives, was led by Dr. Asmak UI Hosnah, SH.MH, Dean of the Faculty of Law, UNPAK.

The delegation was welcomed with a briefing about FOL by its Dean, Prof. Dr Abdul Mohaimin Bin Noordin Ayus. During the significant visit, both faculties achieved an agreement to have continuous collaborations on, among others, research projects, teaching and learning and pedagogy, and student and staff mobility.

Both faculties also had a research topic session. All three research centres and staff at FOL had fruitful interactions with the delegates from the Faculty of Law, UNPAK.



## MMU President Launches Mission Maison: AR & VR Pedagogical Game

Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU launched the Mission Maison: AR & VR Pedagogical Game at the Faculty of Creative Multimedia (FCM) on 30 November 2023. This joint effort between the Embassy of France and FCM aimed to facilitate French language learning among youths in an interactive and engaging way.

Spearheaded by the teaching staff and students of the Bachelor of Multimedia (Hons) in Virtual Reality programme, the application centres on educational activities revolving around the house's vocabulary, which users can access and engage with, immersively via the Augmented Reality (AR) and Virtual Reality (VR) mobile application.

On 20 November 2023, Multimedia University (MMU) inked a Memorandum of Understanding (MoU) with La Trobe University to accelerate academic and research cooperation between higher education institutions.

## MMU, LA Trobe University Ink Pact to Accelerate Academic & Research Cooperation

The pact was signed by Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU and Prof. Amalia Di Lorio AM, Pro Vice-Chancellor of La Trobe University at the Australian High Commission, Kuala Lumpur. The event was also graced by the presence of His Excellency Simon Fellows, Acting High Commissioner of Australia to Malaysia.

The cooperation between MMU and La Trobe University covers academic offerings as in Cybersecurity and other research collaborations.



More than 150 students from Cyberjaya and Melaka campuses attended an event, Huawei Day, Intelligent World 2030 on 24 November 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, President of MMU delivered his welcoming remarks to all event attendees during the event.

## Gaining Technology and Industrial Insights via Huawei Day

Organised by Career Connect with support from the Faculty of Computing and Informatics (FCI) and Faculty of Information Science and Technology (FIST), this event served as a platform for students to learn about Huawei's corporate social responsibility initiative called Seeds for Future.



Huawei representatives also elaborated on the Intelligent World 2030 Vision, examining how technology gives impact to various aspects of our lives through eight key areas namely healthcare,

food, living spaces, transportation, and others. The students also had the opportunity to enquire about Huawei's job opportunities and others during the event.



## **MMU & Peking University Explore Collaboration Venture**

Multimedia University (MMU) received a visit from Peking University School of Materials Science and Engineering on 5 December 2023. Prof. Dato' Dr. Mazliham Mohd Su'ud, the President of MMU welcomed the delegation, which was led by Prof. Ting Lei, its Assistant Dean. Both universities convened to discuss possible collaborations that could be achieved particularly in research development, academic exchange, short courses and others. The delegation also had the opportunity to explore on campus facilities as well as visit

The Faculty of Engineering (FOE). The visit was also attended by Prof. Dr. Wong Hin Yong, Vice President of Academic and Innovative Learning; Assoc. Prof. Dr. Ooi Chee Pun, the FOE Dean; Assoc. Prof. Ir. Ts. Dr. Ng Poh Kiat, the Dean of the Faculty of Engineering and Technology (FET); Assoc. Prof. Ts. Dr. Junaidi Abdullah, the Dean of the Faculty of Computing and Informatics (FCI); Prof. Dr. Ong Du Sheng, faculty representatives and other officials. Peking University is one of the top universities in China and it is ranked among the worldwide universities.





## Unveiling the Digital Frontier – Insights from the 3rd ISeEP 2023

The Faculty of Business (FOB) accomplished a significant milestone by successfully orchestrating its 3rd International Student e-Exchange Programme (ISeEP), spanning from 5 December to 19 2023. This virtual gathering attracted a substantial turnout of approximately 250 participants hailing from Malaysia, Indonesia, the Philippines, China, and various other nations. Under the overarching theme of “Connectivity Unleashed: Revolutionising Learning Through Digital Innovation,” the event sought to explore and leverage the transformative potential of digital innovation in education.

Collaborating closely with esteemed educational institutions like Universitas Pakuan, Universitas Mercu Buana, and Universitas Dian Nuswantoro from Indonesia, as well as the University of the Cordilleras from the Philippines, the e-Exchange fostered a platform for a robust exchange of ideas and expertise. Throughout the 15-day event, these collaborative universities actively engaged in expert talks, showcasing their knowledge and insights in diverse areas. The program’s agenda was enriched with a multitude of engaging and informative sessions. Participants delved into a wide array of topics,

including cultural and digital communications, the ethical dimensions of artificial intelligence, ChatGPT analytics, intercultural communication, taxation in the digital era, social media strategy, and analytics, among numerous others. This comprehensive exposure provided students with multifaceted insights and a deeper understanding of contemporary issues at the intersection of business, technology, and culture. The culminating day of the event was marked by a momentous occasion as all deans representing the co-organising universities expressed their profound appreciation to MMU for spearheading this successful initiative. This enthusiastic endorsement underscored the collaborative spirit and the event’s significance in fostering global connections while advancing innovative learning paradigms.

All in all, the 3rd International Student e-Exchange Programme of 2023 stands as a testament to the power of collaborative endeavours in harnessing digital innovation to transcend geographical boundaries, enrich educational experiences, and empower future generations of global leaders and entrepreneurs.





## MMU President Represents GLU in the MoU Signing Ceremony with APERTI BUMN at Bali, Indonesia.

On 17 January 2023, the Government-Linked Universities (GLU) Malaysia and the *Aliansi Perguruan Tinggi Badan Usaha Milik Negara Indonesia* (APERTI BUMN) renewed their memorandum of understanding (MoU) which has been in existence since 2017 to continue giving benefits to the target group in both countries through the development of academic programs, research, and student mobility.

The Chairperson of GLU and MMU President, Prof. Dato' Dr. Mazliham Mohd Su'ud represented GLU while APERTI BUMN was represented by Prof. Dr. Adiwijaya, Rector of Telkom University Indonesia in the signing ceremony held at Pullman Bali Legian Beach Hotel.

Both parties will support each other to empower the development of academic programs such as mobility involving students and lecturers, offering dual degree programs, research development including joint research, matching grants, collaboration on community service programme, and organising international conferences. The collaboration also involves sharing expertise from both countries to support these cooperation programmes.

APERTI-BUMN and GLU Malaysia Top Leaders Meeting was also attended by Prof. Dr. Ir. Iwa Garniwa M.K., Rector of the PLN Institute of Technology; Prof. Dr. I Lord Nyoman Wiraatmadja Puja, Rector of the University of Pertamina; Dr. Ir. Agus Purnomo, M.T. Rector of International Logistics and Business

Universities; Dr. Ir. Agus Achmad Suhendra, Rector of the Jakarta Telkom Institute of Technology; Dr. Tri Arief Sardjono, Rector of the Surabaya Telkom Institute of Technology; Prof. Dr Fahimah Martak, representing the Rector of the International University of Semen Indonesia; Dr. Arfianto Fahmi, S.T., M.T. – Rector of Telkom Purwokerto Institute of Technology; Dr. Ir. Gatot Kustiyadi, S.E., M.Si. Director of Semen Indonesia Polytechnic; and Dr. Anisah Firlil – Secretary General of APERTI-BUMN.

Meanwhile, from the GLU was Prof. Dato 'Dr. Mazliham Mohd Su'ud, Chairperson of the GLU who is also President of Multimedia University (MMU); Prof. Ir. Dr. Noor Azuan Abu Osman, Deputy Chairperson of the GLU who is also Vice Chancellor of Universiti Tenaga Nasional (UNITEN); Prof. Ts. Dr. Mohamed Ibrahim Abdul Mutalib Vice Chancellor of Universiti Teknologi PETRONAS (UTP), Assoc. Prof. Ir. Dr. Azman Senin, Deputy President of Universiti Kuala Lumpur (UniKL) and Mdm. Nur Azurah Rezo, Secretary General of GLU.



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# Highlights of Selected Publications by MMU Researchers in 2023



### **3.5 Ghz Vivaldi Antennas: A Comprehensive Parametric Analysis For Unleashing 5g Communication Technology**

thman M.A.; Ruslan N.A.S.;  
Misran M.H.; Said M.A.M.;  
Manap R.A.; Jaafar A.S.;  
Hassan N.I.; Suhaimi S.

DOI:  
10.11113/aej.V13.19774

In this study, we discuss the design and testing of a Vivaldi antenna operating at 3.5 GHz, which is well-suited for mobile mid-band 5G connection. CST Microwave Studio software was used to simulate and evaluate the suggested antenna design, which was printed utilising state-of-the-art 3D printing processes and materials (polylactic acid (PLA) and FR-4 circuit board material). The measured results show that the antenna has a reflection frequency of 3.51 GHz and a gain of -23.695 dB. Parametric analysis was carried out to examine the relationship between antenna performance and design parameters, with special focus on the separation between the antenna and the PLA material in the middle of the spherical construction. The Vivaldi antenna is an attractive choice for 5G mid-band applications because of its wideband features, ease of manufacture using typical industrial processes, and simplicity of impedance matching to the feeding line using microstrip line modelling. © 2023 Penerbit UTM Press. All rights reserved.

### **A comprehensive survey on deep- learning based gait recognition for humans in the COVID- 19 pandemic**

Sayeed M.S.; Yusof I.B.;  
bin Abdullah M.F.A.; Bari  
M.A.; Min P.P.

DOI:  
10.11591/ijeecs.v30.i2.pp88  
2-902

Human gait recognition is a biometric technique that has been utilized for security purposes for the last decade. Gait recognition is an appealing biometric modality that aims to identify individuals based on the way they walk. The outbreak of the novel coronavirus (COVID-19), has spread across the world. The number of people infected with COVID-19 is rising rapidly throughout the world. Even though some vaccines for this pandemic have been developed to minimize the effects of COVID-19, deep learning-based gait recognition techniques have shown themselves to be an effective tool for identifying the individuals wearing face mask in COVID-19 pandemic. These techniques play an important part in reducing the rate of COVID-19 spreading throughout the world in the context of the COVID-19 pandemic. Deep learning methods are currently dominating the state-of-the-art in gait recognition and have fostered real-world applications. The main objective of this paper is to provide a comprehensive overview of recent advancements in gait recognition with deep learning, including datasets, test protocols, state-of-the-art solutions, challenges, and future research directions. The purpose of this discussion is to identify current challenges that need to be addressed as well as to suggest some directions for future research that could be explored. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

# **A Binary Survivability Prediction Classification Model towards Understanding of Osteosarcoma Prognosis**

Muthaiyah S.; Singh V.A.;  
Zaw T.O.K.; Anbananthen  
K.S.M.; Park B.; Kim M.J.

DOI: 10.28991/ESJ-2023-  
07-04-018

The objective of this study is to explore effective and innovative machine learning techniques that can assist medical professionals in developing more accurate prognoses that can enhance the survivability of osteosarcoma patients by investigating potential prognostic factors and identifying novel therapeutic approaches. A comprehensive analysis was conducted using a dataset of 128 osteosarcoma patients between 1997 to 2011. The dataset included 52 attributes in total that covered a wide range of demographics, together with information on clinical records, treatment protocols, and survival outcomes. Data was obtained from NOCERAL (National Orthopaedic Centre of Excellence in Research and Learning), Kuala Lumpur. Three distinct binary classification methods (i.e., random forest, support vector machine (SVM), and artificial neural network (ANN)) were employed to identify the prognostic factors that are associated with improved survival efficacy measures. The results of this study revealed that both SVM and ANN outperformed random forests in predicting survivability for both the 2-year and 5-year time frames. These findings indicate the potential of SVM and ANN as effective tools for predicting osteosarcoma survivability. The study signifies a significant step towards integrating machine learning techniques into the existing toolkit available to medical practitioners. This study contributes to the medical field by providing a comparative analysis of three prominent machine learning techniques for predicting osteosarcoma survivability. The superior performance of SVM and ANN over random forests highlights the potential of these methods in generating more accurate survivability predictions. Further development and refinement of these machine learning techniques hold promise for enhancing their effectiveness and instilling greater confidence among medical professionals and patients in the predictive capabilities of machine learning and artificial intelligence models for osteosarcoma survivability. © 2023 by the authors. Licensee ESJ, Italy.

## **A case study of microarray breast cancer classification using machine learning algorithms with grid search cross validation**

Ali N.M.; Besar R.; Aziz  
N.A.A.

DOI:  
10.11591/eei.v12i2.4838

Breast cancer is one of the leading causes of death and most frequently diagnosed cancer amongst women. Annually, almost half a million women do not survive the disease and die from breast cancer. Machine learning is a subfield of artificial intelligence (AI) and computer science that uses data and algorithms to mimic how humans learn, and gradually improving its accuracy. In this work, simple machine learning methods are used to classify breast cancer microarray data to normal and relapse. The data is from the gene expression omnibus (GEO) website namely GSE45255 and GSE15852. These two datasets are integrated and combined to form a single dataset. The study involved three machine learning algorithms, random forest (RF), extra tree (ET), and support vector machine (SVM). Grid search cross validation (CV) is applied for hyperparameter tuning of the algorithms. The result shows that the tuned SVM is best among the tested algorithms with accuracy of 97.78%. In the future it is recommended to include feature selection method to get the optimal features and better classification accuracies. © 2023, Institute of Advanced Engineering and Science. All rights reserved.

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## **A Comparative Performance Analysis of Hybrid and Classical Machine Learning Method in Predicting Diabetes**

Anbananthen K.S.M.; Busst  
M.B.M.A.; Kannan R.;  
Kannan S..

DOI: 10.28991/ESJ-2023-  
07-01-08

Diabetes mellitus is one of medical science's most important research topics because of the disease's severe consequences. High blood glucose levels characterize it. Early detection of diabetes is made possible by machine learning techniques with their intelligent capabilities to accurately predict diabetes and prevent its complications. Therefore, this study aims to find a machine learning approach that can more accurately predict diabetes. This study compares the performance of various classical machine learning models with the hybrid machine learning approach. The hybrid model includes the homogenous model, which comprises Random Forest, AdaBoost, XGBoost, Extra Trees, Gradient Booster, and the heterogeneous model that uses stacking ensemble methods. The stacking ensemble or stacked generalization approach is a meta-classifier in which multiple learners collaborate for prediction. The performance of the homogeneous hybrid models, Stacked Generalization and the classic machine learning methods such as Naive Bayes and Multilayer Perceptron, k-Nearest Neighbour, and support vector machine are compared. The experimental analysis using Pima Indians and the early-stage diabetes dataset demonstrates that the hybrid models achieve higher accuracy in diagnosing diabetes than the classical models. In the comparison of all the hybrid models, the heterogeneous model using the Stacked Generalization approach outperformed other models by achieving 83.9% and 98.5%. © 2023 by the authors. Licensee ESJ, Italy.

## **A comparative study of deep learning and Internet of Things for precision agriculture**

Saranya T.; Deisy C.;  
Sridevi S.; Anbananthen  
K.S.M.

DOI:  
10.1016/j.engappai.2023.10  
6034

Precision farming is made possible by rapid advances in deep learning (DL) and the internet of things (IoT) for agriculture, allowing farmers to upgrade their agriculture operations to sustainably fulfill the future food supply. This paper presents a comprehensive overview of recent research contributions in DL and IoT for precision agriculture. This paper surveys the diverse research on DL applications in agriculture, such as detecting pests, disease, yield, weeds, and soil, including fundamental DL techniques. Also, the work describes the IoT architecture and analyzes sensor categorization, agriculture sensors, and unmanned arial vehicles (UAVs) used in recent research. Besides that, data acquisition, annotation, and augmentation for agriculture datasets were covered, and a few widely used datasets were listed. This work also discusses some challenges and issues that DL and IoT face. Furthermore, the research proposed a bootstrapping approach of Transfer learning where fine-tuned VGG16 is fused with optimized and improved newly built fully connected layers for pest detection. The performance of the proposed model is evaluated and compared with other models, such as custom VGG16 as a classifier; fine-tuned VGG16 is optimized with other optimizers like SGD, RMSProp, and Adam. The results show that the proposed model for pest detection outperforms all other models with an accuracy of 96.58 % and a loss of 0.15%. The review and the proposed work presented in this paper will significantly direct researchers toward DL and IoT for intelligent farming. © 2023 Elsevier Ltd

## **5G handover issues and techniques for vehicular communications**

Rosli M.A.Z.; Razak S.F.A.;  
Yogarayan S.

DOI:  
10.11591/IJEECS.V32.I3.PP  
1442-1450

Vehicular communication is gaining popularity, and seamless handover is critical to maintaining a stable and uninterrupted network connection between vehicles and roadside units. This paper investigates the advancements in handover approaches in vehicular networks, with a specific focus on fifth generation (5G) technology. Vehicular Ad-hoc networks (VANETs) face challenges due to high mobility, dynamic network topology, and frequent information exchange. The paper discusses handover issues in 5G-VANET environments, such as too-late and too-early handovers, wrong handover decisions, and unnecessary handovers. It also explores key performance indicators (KPIs) used in handover evaluation. The advancements in handover approaches presented in this paper pave the way for enhanced connectivity and communication management in 5G-VANETs, contributing to the development of safer and more efficient intelligent transportation systems. © 2023 Institute of Advanced Engineering and Science. All rights reserved.



## **A cost effective and economic method for assessing the performance of photovoltaic module enhancing techniques: Analytical and experimental study**

Sultan S.M.; Tso C.P.;  
Ervina E.M.N.; Abdullah  
M.Z.

DOI:  
10.1016/j.solener.2023.03.0  
04

In an earlier work, the production cost effectiveness factor, FCE, was introduced for the purpose of assessing the economic aspect of photovoltaic module (PV) enhancing techniques, such as the use of reflectors or coolers. This factor is linking the manufacturing cost of PV enhancer with its ability to improve the PV's output power, and is helpful in making design decisions on different types of PV enhancers. However, that assessment method is costly, because it requires one set of a PV without an enhancer that has the same number of solar cells as a PV with an enhancer. In this paper, a new proposal is made for a modified production cost effectiveness factor (FMCE) and its minimum value that depends on first knowing the output power from a single solar cell only, without an enhancer, and the output power from a PV containing an enhancer with a known number of solar cells, the cost of manufacturing of PV enhancer and the one-watt cost of PV power. An experimental study is conducted for PV with single and double reflecting mirror, that shows both FCE and FMCE have the same values. Yet using FMCE is able to reduce the assessment cost by 23.4 and 22% for PV with single and double reflecting mirror, respectively, as compared to using the existing method. It can be concluded that the proposed method is cost effective, applicable for real cases, and should have potential to be applied by designers and manufacturers of PV enhancers. © 2023 International Solar Energy Society

## **A creative place-making framework – Story-creation for a sustainable development**

Tan S.-K.; Tan S.-H.

DOI: 10.1002/sd.2619

Sustainable development is the ultimate goal for policy-makers and place-makers to develop a place. Nevertheless, although many approaches, such as exogenous, endogenous, neo-endogenous, creative cities, and creative place-making, have been studied, realizing a place-based approach requires further research. This study addresses the gaps in these approaches by exploring how a place might be made from a local's perspective. A grounded theory approach was employed to understand the phenomena, and theoretical sampling was applied. Data were collected through interviews, online sharing sessions, and secondary sources. A total of 71 documents were collected and analyzed. Hundreds of open codes were refined to 52 concepts, which later were categorized under 20 sub-dimensions. Next, these sub-dimensions were grouped under eight dimensions and later integrated into three themes – “a creation of stories, a rise of wellbeing, and a sustainable goal”. Lastly, these themes construct a framework for creative place-making. This framework addresses the lacunas of previous studies by illustrating a creative place-making process with the creation of stories, the generations of sense of place and wellbeing, and lastly, addressing the local's problems; this process helps to create a place branding which will motivate more locals to create the stories of their place. © 2023 The Authors. Sustainable Development published by ERP Environment and John Wiley & Sons Ltd.

## **A deep learning approach for lane marking detection applying encode-decode instant segmentation network**

Al Mamun A.; Em P.P.;  
Hossen M.J.; Jahan B.;  
Tahabilder A.

DOI:  
10.1016/j.heliyon.2023.e142  
12

A lot of people suffer from disability and death due to unintentional road accidents, which also result in the loss of a significant amount of financial assets. Several essential features of Advanced Driver Assistance Systems (ADAS) are being incorporated into vehicles by researchers to prevent road accidents. Lane marking detection (LMD) is a fundamental ADAS technology that helps the vehicle to keep its position in the lane. The current study employs Deep Learning (DL) methodologies and has several research constraints due to various problems. Researchers sometimes encounter difficulties in LMD due to environmental factors such as the variation of lights, obstacles, shadows, and curve lanes. To address these limitations, this study presents the Encode-Decode Instant Segmentation Network (EDIS-Net) as a DL methodology for detecting lane marking under various environmental situations with reliable accuracy. The framework is based on the E-Net architecture and incorporates combined cross-entropy and discriminative losses. The encoding segment was split into binary and instant segmentation to extract information about the lane pixels and the pixel position. DenselyBased Spatial Clustering of Application with Noise (DBSCAN) is employed to connect the predicted lane pixels and to get the final output. The system was trained with augmented data from the Tusimple dataset and then tested on three datasets: Tusimple, CalTech, and a local dataset. On the Tusimple dataset, the model achieved 97.39% accuracy. Furthermore, it has an average accuracy of 97.07% and 96.23% on the CalTech and local datasets, respectively. On the testing dataset, the EDIS-Net exhibited promising results compared to existing LMD approaches. Since the proposed framework performs better on the testing datasets, it can be argued that the model can recognize lane marking confidently in various scenarios. This study presents a novel EDIS-Net technique for efficient lane marking detection. It also includes the model's performance verification by testing in three different public datasets. © 2023 The Authors

## A Detailed Analysis of the Modified Economic Method for Assessing the Performance of Photovoltaic Module Enhancing Techniques

Sultan S.M.; Tso C.P.; Ajeel R.K.; Sobayel K.; Abdullah M.Z.

DOI: 10.3390/su151512028

This paper presents a detailed analysis of the modified economic method ((Formula presented.)) for evaluating the performance of photovoltaic module (PV)-enhancing techniques, aiming to address existing research gaps. The impact of influential parameters on the (Formula presented.) is examined through illustrative examples. These parameters include the output power of a single solar cell without an enhancer, output power of a PV with an enhancer, manufacturing cost of the PV enhancer, one-watt cost of PV power, and maximum output power of a solar cell with an enhancer equivalent to maximum output power at standard test conditions (STC). The results of this study reveal that the output power of a single solar cell without an enhancer, number of solar cells with an enhancer in the PV, and manufacturing cost of the PV enhancer have a proportional relationship with the (Formula presented.). As these parameters increase, the (Formula presented.) also increases, which negatively affects the cost-effectiveness of the PV enhancer, leading to lower performance. So, it is advisable to maintain the values of these parameters at lower levels. Conversely, the output power of a PV with an enhancer and the one-watt cost of PV power exhibit an inverse proportional relationship with the (Formula presented.). As the output power of a PV with an enhancer and the one-watt cost of PV power increase, the (Formula presented.) decreases, which positively affects the cost-effectiveness of the PV enhancer, leading to higher performance. Hence, it is recommended to keep these two parameters high for optimal performance. In conclusion, the (Formula presented.) may have potential for application by designers and manufacturers of PV enhancers. © 2023 by the authors.

## A Green Approach to Natural Dyes in Dye-Sensitized Solar Cells

Shukor N.I.A.; Chan K.-Y.; Thien G.S.H.; Yeoh M.-E.; Low P.-L.; Devaraj N.K.; Ng Z.-N.; Yap B.K.

DOI: 10.3390/s23208412

Solar cells are pivotal in harnessing renewable energy for a greener and more sustainable energy landscape. Nonetheless, eco-friendly materials for solar cells have not been as extensive as conventional counterparts, highlighting a significant area for further investigation in advancing sustainable energy technologies. This study investigated natural dyes from cost-effective and environmentally friendly blueberries and mulberries. These dyes were utilized as alternative sensitizers for dye-sensitized solar cells (DSSCs). Alongside the natural dyes, a green approach was adopted for the DSSC design, encompassing TiO<sub>2</sub> photoanodes, eco-friendly electrolytes, and green counter-electrodes created from graphite pencils and candle soot. Consequently, the best-optimized dye sensitizer was mulberry, with an output power of 13.79  $\mu$ W and 0.122  $\mu$ W for outdoor and indoor environments, respectively. This study underscored the feasibility of integrating DSSCs with sensitizers derived from readily available food ingredients, potentially expanding their applications in educational kits and technology development initiatives.

## **A Discourse on the Malaysian Geographical Indications Act**

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The Malaysian Parliament approved three Bills on Intellectual Property rights. One of it is the Geographical Indications Bill 2021, repealing the Geographical Indications Act 2000 (the Old Act). The new Bill received royal assent on 16 March 2022 and came into operation on 18 March 2022, known as the Geographical Indications Act 2022 (the New Act). The revisions made in the New Act were essential to harmonise intellectual property standards in Malaysia and facilitate the country's accession to the Marrakesh Treaty. These amendments ensure that Malaysia adheres to the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and fulfils its obligations under the Regional Comprehensive Economic Partnership (RCEP). The purpose of this paper is to examine the salient features introduced by the provisions of the New Act and to examine how the enhanced provisions attempt to realign intellectual property standards in Malaysia concerning Malaysia's broader obligations under the Regional Comprehensive Economic Partnership which have come into effect in Malaysia on 18 March 2022. The methodology employed in this research is doctrinal, especially focusing on the interpretation and analysis of the statutory provisions. In light of the changes in the New Act, New Regulations and the New Guidelines, the paper concludes by forwarding several recommended best practices to be considered by registered proprietors in the country. © 2023; This is an Open Access Research distributed under the term of the Creative Commons Attribution License (<https://creativecommons.org/licences/by/4.0>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original works are properly cited.

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## **A novel simplified approach in fabricating TiO<sub>2</sub> photoanodes for dye-sensitized solar cells**

Yeoh M.-E.; Chan K.-Y.;  
Wong H.-Y.; Thien G.S.H.;  
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0

Globally, the hydrothermal method is widely adopted in synthesizing TiO<sub>2</sub> photoanodes for various applications, including dye-sensitized solar cells (DSSCs). Nonetheless, this method typically involves several synthesis steps, and most reported works were intricate and complex to follow. In this work, a reinvented novel methodology for hydrothermal synthesis was successfully developed. The mixed-phase of anatase-rutile TiO<sub>2</sub> photoanodes was demonstrated by omitting several intermediate hydrothermal steps. Using the reinvented methodology, the DSSC devices presented a comparable and excellent power conversion efficiency ( $\eta = 3.30\%$ ) to commercial TiO<sub>2</sub>-based DSSCs ( $\eta = 3.81\%$ ). Hence, this preliminary study provided new perspectives toward simplifying wet chemical synthesis TiO<sub>2</sub> techniques for the design structure of DSSCs. © 2023 Elsevier B.V.

## **A Feasibility Study on the Conversion from Manual to Semi-Automatic Material Handling in an Oil and Gas Service Company**

Saptari A.; Ng P.K.; Junardi M.; Taslim A.

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10.3390/safety9010016

In manufacturing companies, manual material handling (MMH) involves lifting, pushing, pulling, carrying, moving, and lowering objects, which can lead to musculoskeletal disorders (MSDs) among workers, resulting in high labor costs due to excessive overtime incurred for manual product preparation. The aim of this study was to show how ergonomic measures were used to reduce the risk of MSDs and to reduce operating costs in the warehouse department of an oil and gas service company. A preliminary study using the Nordic Body Map survey showed that the workers experienced pain in various parts of the body, indicating the presence of MSDs. The researchers then used methods such as the Rapid Upper Limb Assessment (RULA), Rapid Entire Body Assessment (REBA), and National Institute for Occupational Safety and Health (NIOSH) assessments to verify whether the MMH activities had an acceptable level of risk. The results revealed that certain manual material handling (MMH) activities were assessed as low–very high risk, with RULA scores ranging from 3 to 7 and REBA scores ranging from 4 to 11. An immediate solution was to replace the manual process with a semi-automatic process using a vacuum lifter. A feasibility study was conducted using the net present value (NPV), internal rate of return (IRR), and payback period to justify the economic viability of the solution. The analysis indicated that implementing the vacuum lifter not only mitigated the risk of MSDs but also reduced the operating costs, demonstrating its viability and profitability. Overall, this study suggests that implementing a vacuum lifter as an assistive device in the warehouse would be a beneficial investment for both the workers and the company, improving both well-being and finances. © 2023 by the authors.

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## **A Review on Heart Diseases Prediction Using Artificial Intelligence**

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Heart disease is one of the major concerns of this modern world. The insufficiency of the experts has made this issue a bigger concern. Diagnosing heart diseases at an early stage is possible with Artificial Intelligence (AI) techniques, which will lessen the needed number of experts. This paper has initially discussed different kinds of heart diseases and the importance of detecting them early. Two popular diagnosis systems for collecting data and their working function are then highlighted. Different types of Model architectures in the corresponding field are described. Firstly, the Support Vector Machine (SVM) machine learning algorithm is described, and secondly, popular deep learning model architecture such as Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), Long Short-Term Memory (LSTM), etc. are highlighted to detect heart disease. Finally, discussion, comparison, and future work are described. This article aims to clarify AI's present and future state in medical technology to predict heart diseases. © 2023, ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering.

## **A Hybrid Solar-RF Energy Harvesting System Based on an EM4325-Embedded RFID Tag**

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5

This paper presents the deployment of a hybrid energy harvesting system that combines a wireless energy harvesting (EH) system and a 6 V, 170 mA monocrystalline solar energy derived from the Sun's rays. The hybrid energy harvesting (HEH) system comprises the rectifier, the solar cell panel, the charging circuit, and the EM4325 embedded RFID tag. This study aims to design an efficient EH system capable of increasing the read range of an active RFID tag. The proposed approach integrates a meandered line radio frequency identification (RFID) tag with an EM4325 IC chip as the receiver antenna. A halfwave doubler RF rectifier circuit is connected to the antenna using a 50  $\Omega$  SMA connector to convert the captured RF waves into usable electrical power. A solar energy charging module equipped with a Maximum Power Point Tracking (MPPT) system, a rechargeable lithium-ion battery, and a DC-DC converter is configured to manage and store the harvested energy efficiently. The UHF tag antenna operates at 919 MHz, achieving a peak gain of 3.54 dB. The proposed rectenna achieves a maximum measured harvested power conversion efficiency (PCE) of 55.14% for an input power ( $P_{in}$ ) of 15 dBm at a distance of 5.10 cm, while the solar cell panel realizes 3.92 W of power. Experimental results demonstrate the hybrid harvester system's effectiveness, achieving a PCE of 86.49% at an output voltage (VDC) of 5.35 V. The main advantage of this approach is the creation of a compact hybrid RF and solar EH system by combining the solar cell panel with the antenna, thus enabling multi-functionality. © 2023 by the authors.

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## **A review on Potential applications of IoT in Microalgae Cultivation and Landfill Leachate Compositions Leading to Non communicable Diseases**

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The Internet of Things (IoT) is a network of physical objects that are outfitted with integrated technology that gives them the ability to sense and interact with the environment. IoT has potential applications in a microalgae biorefinery for the automatic control of microalgae cultivation. Microalgae biorefinery is a way where microalgal biomass can be converted into variety of value-added products. The biological treatments using microalgae have drawn a considerable attention on leachate treatment. The leachate is full of dangerous chemicals, many of which are known to cause cancer and other non-communicable diseases to human health. A dual-purpose method to treat the leachate as well as microalgae culturing significantly contribute to a substantial saving in the overall cost of microalgae biomass production. The comparison of different types of microalgae species and its nutrients uptake at various landfills has been discussed in this paper. An integrated microalgae biorefinery system will make it easier for biofuels, high value products, and industrial chemicals to be made from biomass, concurrently reducing the toxicity of leachate and noncommunicable diseases around the world. © 2023 IEEE.

## **A Machine Learning Web App to Predict Diabetic Blood Glucose Based on a Basic Noninvasive Health Checkup, Sociodemographic Characteristics, and Dietary Information: Case Study**

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DOI: 10.2196/49113

Background: Over the past few decades, diabetes has become a serious public health concern worldwide, particularly in Bangladesh. The advancement of artificial intelligence can be reaped in the prediction of blood glucose levels for better health management. However, the practical validity of machine learning (ML) techniques for predicting health parameters using data from low- and middle-income countries, such as Bangladesh, is very low. Specifically, Bangladesh lacks research using ML techniques to predict blood glucose levels based on basic noninvasive clinical measurements and dietary and sociodemographic information. Objective: To formulate strategies for public health planning and the control of diabetes, this study aimed to develop a personalized ML model that predicts the blood glucose level of urban corporate workers in Bangladesh. Methods: Based on the basic noninvasive health checkup test results, dietary information, and sociodemographic characteristics of 271 employees of the Bangladeshi Grameen Bank complex, 5 well-known ML models, namely, linear regression, boosted decision tree regression, neural network, decision forest regression, and Bayesian linear regression, were used to predict blood glucose levels. Continuous blood glucose data were used in this study to train the model, which then used the trained data to predict new blood glucose values. Results: Boosted decision tree regression demonstrated the greatest predictive performance of all evaluated models (root mean squared error=2.30). This means that, on average, our model's predicted blood glucose level deviated from the actual blood glucose level by around 2.30 mg/dL. The mean blood glucose value of the population studied was 128.02 mg/dL (SD 56.92), indicating a borderline result for the majority of the samples (normal value: 140 mg/dL). This suggests that the individuals should be monitoring their blood glucose levels regularly. Conclusions: This ML-enabled web application for blood glucose prediction helps individuals to self-monitor their health condition. The application was developed with communities in remote areas of low- and middle-income countries, such as Bangladesh, in mind. These areas typically lack health facilities and have an insufficient number of qualified doctors and nurses. The web-based application is a simple, practical, and effective solution that can be adopted by the community. Use of the web application can save money on medical expenses, time, and health management expenses. The created system also aids in achieving the Sustainable Development Goals, particularly in ensuring that everyone in the community enjoys good health and well-being and lowering total morbidity and mortality. © Masuda Begum Sampa, Topu Biswas, Md Siddikur Rahman, Nor Hidayati Binti Abdul Aziz, Md Nazmul Hossain, Nor Azlina Ab Aziz.

## **A Review on Quality of Service Monitoring, Violation and Remediation for the Cloud**

Khan H.M.; Chua F.-F.; Yap T.T.V.

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10.33168/JSMS.2023.0507

Cloud computing has emerged as a dominant paradigm for delivering scalable and on-demand computing resources to users worldwide. However, ensuring Quality of Service (QoS) in cloud environments remains a critical challenge. This review paper comprehensively analyzes the state-of-the-art techniques, methodologies, and frameworks for QoS monitoring, violation detection, and remediation in cloud-based systems. This paper examines studies related to the concepts of QoS monitoring, violations, and remediation using resource allocation and scalability in cloud computing. It provides a taxonomy of QoS metrics, including availability, response time, and throughput, that are essential for evaluating and maintaining the performance of cloud services. The review further examines the existing approaches for cloud QoS monitoring, ranging from infrastructure to application-level monitoring. It discusses various monitoring tools and technologies employed to collect and analyze QoS data, including cloud type, license, operating systems, and supported languages. Additionally, the paper investigates the techniques for detecting QoS violations in the cloud environment. It explores machine learning algorithms and hybrid methods that leverage a combination of these techniques to identify QoS violations accurately. Furthermore, the paper explores the remediation strategies for QoS violations in the cloud. It presents proactive and reactive approaches to address QoS breaches, such as QoS-aware, energy-efficient, dynamic, multidimensional deadline-based, load balancing, cost-aware, workload, scalability, and adaptive resource allocation. It also discusses the challenges and validity threats associated with this research study. Throughout the review, the paper identifies the strengths and limitations of the existing approaches. It provides insights into future research directions in QoS monitoring, violation detection, and remediation for cloud-based systems. It emphasizes the need for standardized frameworks and benchmarks to evaluate and compare different QoS monitoring and remediation techniques. In conclusion, this review paper consolidates the current knowledge and advancements in QoS monitoring, violation detection, and remediation for cloud computing. It serves as a valuable resource for researchers seeking to enhance QoS assurance in cloud environments, ultimately improving the trust and performance of cloud services. © 2023, Success Culture Press. All rights reserved.



## **A Survey on the Design Aspects and Opportunities in Age-Aware UAV-Aided Data Collection for Sensor Networks and Internet of Things Applications**

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Due to the limitations of sensor devices, including short transmission distance and constrained energy, unmanned aerial vehicles (UAVs) have been recently deployed to assist these nodes in transmitting their data. The sensor nodes (SNs) in wireless sensor networks (WSNs) or Internet of Things (IoT) networks periodically transmit their sensed data to UAVs to be relayed to the base station (BS). UAVs have been widely deployed in time-sensitive or real-time applications, such as in disaster areas, due to their ability to transmit data to the destination within a very short time. However, timely delivery of information by UAVs in WSN/IoT networks can be very complex due to various technical challenges, such as flight and trajectory control, as well as considerations of the scheduling of UAVs and SNs. Recently, the Age of Information (AoI), a metric used to measure the degree of freshness of information collected in data-gathering applications, has gained much attention. Numerous studies have proposed solutions to overcome the above-mentioned challenges, including adopting several optimization and machine learning (ML) algorithms for diverse architectural setups to minimize the AoI. In this paper, we conduct a systematic literature review (SLR) to study past literature on age minimization in UAV-assisted data-gathering architecture to determine the most important design components. Three crucial design aspects in AoI minimization were discovered from analyzing the 26 selected articles, which focused on energy management, flight trajectory, and UAV/SN scheduling. We also investigate important issues related to these identified design aspects, for example, factors influencing energy management, including the number of visited sensors, energy levels, UAV cooperation, flight time, velocity control, and charging optimization. Issues related to flight trajectory and sensor node scheduling are also discussed. In addition, future considerations on problems such as traffic prioritization, packet delivery errors, system optimization, UAV-to-sensor node association, and physical impairments are also identified. © 2023 by the authors.

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## **An Intelligent Waste Management System Enabled by IoT**

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G.S.H.; Ng Z.-N.

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0312

Waste management is an important aspect to be addressed in Smart Cities and buildings. An effective waste management system can reduce the reliance on workforce and also reduce the labor cost required for systematic waste collection. The advancement in IoT technology enables waste management to be carried out effectively and promptly when the garbage is fully occupied. This work aims to develop a smart waste management system based on the Internet of Things (IoT), implemented with sensors that can track the level of waste in the garbage bin. The developed idea here is novel, deploying a simple IoT enabled ultrasonic sensor setup to realize waste level monitoring and remotely making the data available to users so that waste collection can be carried out effectively and timely upon full occupancy. © 2023, Ismail Saritas. All rights reserved.

## **A Survey on Handover and Mobility Management in 5G HetNets: Current State, Challenges, and Future Directions**

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Mitani S.M.; Khan S.A.;  
Jusoh M.H.

DOI: 10.3390/s23115081

Fifth-generation (5G) networks offer high-speed data transmission with low latency, increased base station volume, improved quality of service (QoS), and massive multiple-input–multiple-output (M-MIMO) channels compared to 4G long-term evolution (LTE) networks. However, the COVID-19 pandemic has disrupted the achievement of mobility and handover (HO) in 5G networks due to significant changes in intelligent devices and high-definition (HD) multimedia applications. Consequently, the current cellular network faces challenges in propagating high-capacity data with improved speed, QoS, latency, and efficient HO and mobility management. This comprehensive survey paper specifically focuses on HO and mobility management issues within 5G heterogeneous networks (HetNets). The paper thoroughly examines the existing literature and investigates key performance indicators (KPIs) and solutions for HO and mobility-related challenges while considering applied standards. Additionally, it evaluates the performance of current models in addressing HO and mobility management issues, taking into account factors such as energy efficiency, reliability, latency, and scalability. Finally, this paper identifies significant challenges associated with HO and mobility management in existing research models and provides detailed evaluations of their solutions along with recommendations for future research. © 2023 by the authors.

## **A Systematic Literature Review on Emotion Recognition System In Malaysia**

Yamin M.N.M.; Aziz K.Ab.;  
Siang T.G.; Aziz N.A.A.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85149485466&partnerID=40&md5=a5bddea9d753706cb64258b980e344f>

Artificial intelligence (AI) is an important technology that evolved from theories into tangibility with significant impacts and applications across sectors as well as borders. It is also one of the key technologies that gave rise to the fourth industrial revolution (IR 4.0). One key subcategory of AI is the automated emotion recognition system (ERS); the application of AI to recognize human emotional states. ERS is seen as an embedded technology that can be used in our daily lives and environment including the workplace. The importance of ERS will become more significant as we move towards the fifth industrial revolution (IR 5.0), where one of the key aspects identified is the enhancements in human-computer interaction (HCI). ERS has the potential to enable smart HCI, i.e. ERS can be seen as a technology to bridge us from IR 4.0 into IR 5.0. Crucial for this is good adoption or diffusion levels of ERS amongst society. Therefore, there is a need to understand the factors that affect the adoption of ERS. Specifically, this paper seeks to establish and discuss the current ERS research landscape in Malaysia by reporting findings from the systematic literature review covering works over a decade; from the year 2011 to 2022. © The 2023 International Conference on Artificial Life and Robotics (ICAROB2023), Feb. 9 to 12, on line, Oita, Japan.

## **A two-stage optimization method for Vehicle to Grid coordination considering building and Electric Vehicle user expectations**

Chai Y.T.; Che H.S.; Tan C.; Tan W.-N.; Yip S.-C.; Gan M.-T.

DOI:  
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4

The formulation of the Vehicle to Grid (V2G) scheme should ideally consider both Electric Vehicle (EV) and building owners' viewpoints. From the building owner's viewpoint, the EVs should be present in the building and participate consistently to deliver the required power. From the EV owners' viewpoint, participating in the V2G scheme should provide economic incentives while not compromising their travel needs. However, those proposed V2G algorithms up to this point in time had not considered any corrections required in response to unplanned changes in the EV travel plan. In this paper, a Two-stage optimization technique is proposed to determine the charging and discharging schedule for EVs participating in a vehicle-to-grid (V2G) programme at an office building. The EV owners' travel convenience is focused with more attention in the proposed model by giving them two V2G options. Firstly, day-ahead optimization (DAO) is applied, based on the expected building load profile and EV behaviour, the optimal charging or discharging control of the EVs is obtained in order to save electricity bills by minimizing the maximum demand of the building. Subsequently, a real-time optimization (RTO) is performed to adjust the V2G operation based on actual vehicle behaviours which usually deviate from their estimations. Simulations are conducted and the preliminary results show that the proposed technique is able to adjust the EV charging or discharging in real-time with the aid of the day-ahead stage. The proposed model manages to capture a new ideal optimal maximum demand point and maintain the EV SOC profile as planned from the DAO stage in real-time when prediction deviation occurs. In addition, a comprehensive cost-benefit analysis in utilizing V2G in peak load reduction is also performed to gain insight into the potential savings and discharging rewards attributable to the building and EV owner respectively. © 2023 Elsevier Ltd

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## **Advances of vehicular ad hoc network using machine learning approach**

Meng T.; Yogarayan S.; Razak S.F.A.; Kannan S.; Azman A.

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1426-1433

Vehicular ad hoc networks (VANETs) play a crucial role in intelligent transportation systems (ITS), enabling seamless communication between vehicles and other entities. VANETs provide a wide range of services, allowing vehicles to communicate with each other and with roadside infrastructure. With the increasing amount of data generated by VANETs, machine learning approaches have emerged as valuable tools to address complex challenges in this domain. This paper presents a comprehensive literature review on the application of machine learning in VANETs. The paper discusses the potential challenges and future research directions in the field, emphasizing the need for more accessible machine learning solutions for VANETs. This review emphasizes the significant role of machine learning approach in advancing the capabilities of VANETs and shaping the future of intelligent transportation systems. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

## **A Unique Strategy for Improving Facility Layout: An Introduction of The Origin Algorithm**

Nordin N.N.; Ab Razak R.;  
Marthandan G.

DOI: 10.3390/su151411022

The Facility Layout Problem (FLP) is a challenging task with significant sustainability implications. Due to its multifaceted nature, it is classified as a non-deterministic polynomial-time (NP)-hard problem, further compounded by increasing computational demands. The FLP aims to optimise the allocation of factory facilities to maximise production efficiency while minimising material handling costs. To tackle these challenges, researchers have developed a two-phase heuristic algorithm called The Origin (TO), which draws inspiration from the experiential process of the bin-packing problem. The TO algorithm considers various factors, such as operating and capacity limitations, as well as material handling costs, to optimize facility layout designs. Extensive evaluations of the TO algorithm using benchmark sizes ranging from 14 to 125 have shown that it outperforms alternative metaheuristic approaches. The TO algorithm yields more sustainable outcomes by minimising material handling costs while improving production efficiency. These results highlight the importance of addressing various constraints, especially industrial constraints, in facility layout designs and demonstrates the potential of heuristic algorithms to support these efforts. © 2023 by the authors.

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## **AALLA: Attack-Aware Logical Link Assignment Cost-Minimization Model for Protecting Software-Defined Networks against DDoS Attacks**

Ali S.; Tan S.C.; Lee C.K.;  
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DOI: 10.3390/s23218922

Software-Defined Networking (SDN), which is used in Industrial Internet of Things, uses a controller as its "network brain" located at the control plane. This uniquely distinguishes it from the traditional networking paradigms because it provides a global view of the entire network. In SDN, the controller can become a single point of failure, which may cause the whole network service to be compromised. Also, data packet transmission between controllers and switches could be impaired by natural disasters, causing hardware malfunctioning or Distributed Denial of Service (DDoS) attacks. Thus, SDN controllers are vulnerable to both hardware and software failures. To overcome this single point of failure in SDN, this paper proposes an attack-aware logical link assignment (AALLA) mathematical model with the ultimate aim of restoring the SDN network by using logical link assignment from switches to the cluster (backup) controllers. We formulate the AALLA model in integer linear programming (ILP), which restores the disrupted SDN network availability by assigning the logical links to the cluster (backup) controllers. More precisely, given a set of switches that are managed by the controller(s), this model simultaneously determines the optimal cost for controllers, links, and switches.

## **Academic entrepreneurial engagement for frugal innovation in higher education institutions: a systematic literature review**

Toyin Ojo O.; Dorasamy M.;  
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Rajeswari R.; Tung S.S..

DOI:  
10.12688/f1000research.733  
12.3

Higher education institutions (HEI) are faced with increasing challenges related to shrinking resources, high operation costs, the COVID-19 pandemic, decreasing student enrolment rates, and pressure to contribute to regional development and economic growth. To overcome such challenges, academics must move beyond their traditional functions of research and teaching and engage in entrepreneurial activities. Through engagement in entrepreneurial activities, academics can contribute to frugal innovation (FI) in private HEI (PHEI). The literature in this context emphasizes that academic entrepreneurial engagement (AEE) will lead to innovation, the identification of opportunities for new business ventures, financial rewards for institutions and academics, an impact on the economy, and the enhancement of social welfare. This study presents a systematic review of the literature and adopts the Transfield five-phase strategy to review the literature on AEE from the past two decades (2000–2020). A total of 1,067 papers on FI are obtained, only five of which focus on AEE. Moreover, papers related to AEE for FI are few. The study presents the research gaps, challenges, and potential factors for further research in this context. We conclude that FI for AEE in PHEI can be a game-changer for future sustainability. Moreover, we believe that the outcome of this review warrants further research. Copyright: © 2023 Toyin Ojo O et al.

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## **A Survey on 5G Coverage Improvement Techniques: Issues and Future Challenges**

Sudhamani C.; Roslee M.;  
Tiang J.J.; Rehman A.U.

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Fifth generation (5G) is a recent wireless communication technology in mobile networks. The key parameters of 5G are enhanced coverage, ultra reliable low latency, high data rates, massive connectivity and better support to mobility. Enhanced coverage is one of the major issues in the 5G and beyond 5G networks, which will be affecting the overall system performance and end user experience. The increasing number of base stations may increase the coverage but it leads to interference between the cell edge users, which in turn impacts the coverage. Therefore, enhanced coverage is one of the future challenging issues in cellular networks. In this survey, coverage enhancement techniques are explored to improve the overall system performance, throughput, coverage capacity, spectral efficiency, outage probability, data rates, and latency. The main aim of this article is to highlight the recent developments and deployments made towards the enhanced network coverage and to discuss its future research challenges. © 2023 by the authors.

## **Adoption of smart urban farming to enhance social and economic well-being of elderly: a qualitative content analysis**

Khan N.; Lau T.C.; Tan B.C.

DOI:  
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Urban farming has progressively gained attention as it promotes innovation and contributes to the modernisation of the agricultural sector. The inclusion of smart technologies helps to accomplish greater efficiency and sustainability in urban farming. Nevertheless, the knowledge of the relationship between population ageing and urban change and the demand to adopt urban farming with the inclusion of technologies from the perspectives of the elderly is still under-explored. This study aimed to investigate the role of social entrepreneurship and the adoption factors in accepting smart urban farming that led to the social and economic well-being of the elderly. The study uses the framework method, which is an excellent tool for qualitative content analysis. An interview was conducted to gather feedback from the elderly through the purposive sampling technique. This study employed the diffusion of innovation theory and the theory of planned behaviour to investigate the adoption behaviour of smart urban farming among the elderly. According to the findings, having a positive attitude and a positive social influence on urban farming help to increase the adoption of smart urban farming. It is also discovered that using technology in farming could help them survive in farming. Most importantly, the findings revealed that effective social entrepreneurship involvement provided them with information and technical advice that influenced smart urban farming adoption. Consequently, the adoption of smart urban farming enhances the elderly well-being. The ease of use of farming technology is the most important factor in the adoption of smart urban farming. Furthermore, the adoption of smart urban farming is influenced by both attitude and subjective norms. Social entrepreneurs could play a role in enhancing elderly knowledge and understanding of smart urban farming. © 2023 The Authors. Published by Rynnye Lyan Resources.

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## **A Review Study of IEEE 802.11p On-Board Unit for V2X Deployment**

Fung C.C.; Yogarayan S.; Abdul Razak S.F.; Azman A.

DOI:  
10.1109/ICoICT58202.2023.10262808

Intelligent transportation systems (ITS) are increasing in popularity as a way to improve road safety and efficiency. A critical component of ITS is the use of wireless communication systems, such as the dedicated short-range communication (DSRC) IEEE 802.11p standard, to enable communication between vehicles and infrastructure. This project aims to evaluate the performance of an on-board unit (OBU) utilizing the IEEE 802.11p standard in a vehicular communication system. The project contributes to a better understanding of the capabilities and limitations of the IEEE 802.11p standard in the context of ITS applications. The project will certainly also be useful for researchers and the community working in this field. Besides, the project also provides valuable insights into the performance of an OBU utilizing the IEEE 802.11p standard and can be used to convey the optimization and improvement of vehicular communication systems for the use of ITS applications. © 2023 IEEE.

## **AMBIENT TEMPERATURE EFFECT ON SILICON PHOTOVOLTAICS UNDER SIMULATED ENVIRONMENTS**

Abdulaziz T.; Chan K.-Y.;  
Thien G.S.H.; Siow C.-L.;  
Yap B.K.; Marlinda A.R.

DOI:  
10.11113/jurnalteknologi.v85  
.20041

Solar energy is a significant renewable source for home and commercial applications. These solar technologies behave differently depending on the ambient temperature surrounding the devices. Thus, the varying ambient temperature necessitates research into the efficacy of various solar technologies under real-life circumstances. In this study, three types of solar technology were studied, which were polycrystalline, monocrystalline, and amorphous silicon photovoltaics (PVs). All the PVs were tested under various simulated environments (hot, room, and cold temperatures). Additionally, real environmental condition tests under direct sunlight successfully depicted the relationship between solar irradiance and ambient temperature on the PVs. Overall, monocrystalline PV outperformed polycrystalline PV, whereas amorphous PV performed poorly. This observation was evident in the lowest performance reduction of monocrystalline PV in hot (power,  $P_{pv} = 37\%$ ), room ( $P_{pv} = 82\%$ ), cold ( $P_{pv} = 95\%$ ), and direct sunlight ( $P_{pv} = 72\%$ ) conditions. Hence, this research could address the importance of selecting PVs in real-life environments in producing efficient solar PV technologies. © 2023, Penerbit UTM Press. All rights reserved.

## **An Analysis of Width Feedline of Ice Cream Cone Antenna in 5G Technology for Internet of Things (IoT) Applications**

Ismail S.; Othman M.A.;  
Misran M.H.; Meor Said  
M.A.; Jaafar A.S.; Abdul  
Manap R.; Nugraha Y.T.;  
Hassan N.M.; Suhaimi S.

DOI:  
10.1109/ICIT58056.2023.10  
226016

This paper presents an analysis, fabrication, and design of a low-profile ice cream cone antenna, which serves as a component of an IoT communication system, specifically for 5G applications. The resonance frequency is targeted at 3.5 GHz, and the antenna dimensions are 45 mm x 30 mm. Constructed on an FR4 substrate with a dielectric thickness of 1.6 mm and a dielectric constant ( $\epsilon_r$ ) of 4.3, the antenna's performance is evaluated by exploring the impact of varying the rectangle's length parameter. The antenna is intended to operate within the 2 GHz to 5 GHz spectrum and will undergo simulation using CST Microwave Studio. Leveraging the concept of UV-printed antenna manufacturing, this design aims to reduce production costs, weight, and overall dimensions while maintaining functionality. Combining circular, triangular, and rectangular patches, the antenna's effectiveness is assessed based on various parameters, including the S parameter, antenna gain, pattern radiation, directivity, and efficiency. To ensure favorable return loss characteristics, the S11 value of the proposed antenna must be below -10 dB. © 2023 IEEE.

## **An Analysis of Width Feedline of Ice Cream Cone Antenna in 5G Technology for Internet of Things (IoT) Applications**

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## **An Ensemble-Based Framework to Estimate Software Project Effort**

Haris M.; Chua F.-F.; Lim  
A.H.-L.

DOI:  
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3.10256337

Effort estimation is essential for successful software project planning, budgeting, and risk identification. However, the techniques used to estimate effort are often inaccurate, outdated, and only consider technical factors while neglecting project management or stakeholder engagement. Expert estimation remains an important technique for leveraging human expertise in software estimation, but solely relying on this technique causes biased and subjective predictions. Machine learning (ML) techniques have shifted the direction of software project effort estimation towards computational intelligence. Nonetheless, there is a lack of deployment due to ambiguous outcomes and ineffective model-building approaches. This study presents an ensemble-based framework that can estimate software project effort more accurately with the incorporation of domain knowledge and experiences. To achieve this, six homogeneous classifier ensembles will be constructed using six distinct classifiers on the proposed USP05-FT dataset. The collected expert estimations will be integrated into the proposed dataset as an additional feature in the form of numerical values such as expert-provided software project effort estimations (in person hours) that provide additional insight and knowledge. Subsequently, the predictions of all six homogeneous classifier ensembles will be combined through majority voting to obtain a more accurate and reliable prediction with increased robustness against errors and uncertainties. The performance of the proposed framework will be evaluated using Recall, F-measure, Precision, and Accuracy. It is expected that the proposed ensemble-based framework for software project effort estimation will lead to more efficient and effective software project management, an improvement in resource allocation, empowering informed decision-making, and timely project delivery. © 2023 IEEE.



## **An effective framework to improve the managerial activities in global software development**

Siddique S.; Naveed M.; Ali A.; Keshta I.; Satti M.I.; Irshad A.; Alomari Z.; Edo O.C.; Diekola O.A.

DOI: 10.1515/nleng-2022-0312

Global Software Development (GSD) is a contemporary approach to software development that offers numerous advantages, including enhanced cost-effectiveness and timely delivery. It enables access to a vast pool of skilled developers and facilitates the exchange of best practices and innovative ideas within the software industry. However, effective project management plays a vital role in ensuring successful product development. Organizations that achieve project success consistently adhere to well-defined project management methodologies, resulting in desired outcomes within predefined time frames and allocated resources. The success rate of software projects significantly increases with diligent software management efforts. Nevertheless, the distributed nature of GSD presents significant challenges related to collaboration, information dissemination, and process control, which ultimately impede effective development and compromise software quality. In this study, we identify various challenges associated with the GSD process and propose strategies to overcome obstacles to effective project management. Additionally, we introduce a comprehensive framework designed to enhance managerial activities in GSD. © 2023 the author(s), published by De Gruyter.

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## **Ambient Temperature Effect On Silicon Photovoltaics Under Simulated Environments**

Abdulaziz T.; Chan K.-Y.; Thien G.S.H.; Siow C.-L.; Yap B.K.; Marlinda A.R.

DOI:  
10.11113/jurnalteknologi.v85.20041

Solar energy is a significant renewable source for home and commercial applications. These solar technologies behave differently depending on the ambient temperature surrounding the devices. Thus, the varying ambient temperature necessitates research into the efficacy of various solar technologies under real-life circumstances. In this study, three types of solar technology were studied, which were polycrystalline, monocrystalline, and amorphous silicon photovoltaics (PVs). All the PVs were tested under various simulated environments (hot, room, and cold temperatures). Additionally, real environmental condition tests under direct sunlight successfully depicted the relationship between solar irradiance and ambient temperature on the PVs. Overall, monocrystalline PV outperformed polycrystalline PV, whereas amorphous PV performed poorly. This observation was evident in the lowest performance reduction of monocrystalline PV in hot (power,  $P_{pv} = 37\%$ ), room ( $P_{pv} = 82\%$ ), cold ( $P_{pv} = 95\%$ ), and direct sunlight ( $P_{pv} = 72\%$ ) conditions. Hence, this research could address the importance of selecting PVs in real-life environments in producing efficient solar PV technologies. © 2023, Penerbit UTM Press. All rights reserved.

## **An Evaluation Study of User Authentication in the Malaysian FinTech Industry With uAuth Security Analytics Framework**

Tan S.F.; Chung G.C.

DOI: 10.4018/JCIT.318703

The increased cyberattack frequency and ferocity have alerted the fintech industry in detecting existential security threats and risks. Various authentication mechanisms have been deployed to countermeasure cyberattacks; whether these deployed solutions fulfil the security and technical standards has not been significantly investigated. This article proposed an uAuth security analytics framework to evaluate the deployed user authentication mechanisms. Subsequently, the technical evaluation study covered ten major commercial banks in Malaysia, whereas 120 respondents aged 18 to 25 participated in the user awareness study. The result found that mobile banking enforces more robust user authentication mechanisms than internet banking in Malaysia. As 80% of the Malaysia fintech systems only ranked as Level 3 of the uAuth security analytics framework, the authors urge Malaysia fintech industry to enhance their authentication factor, login and transaction verification methods, password policy, as well as readiness for quantum-safe security technologies. © 2023 Authors. All rights reserved.

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## **Attention Based Spatial-Temporal GCN with Kalman filter for Traffic Flow Prediction**

Al-Selwi H.F.; Aziz A.A.;  
Abas F.B.; Kayani A.; Noor  
N.M.

DOI:  
10.14716/ijtech.v14i6.6646

Intelligent Transportation Systems (ITS) are becoming increasingly important as traditional traffic management systems struggle to handle the rapid growth of vehicles on the road. Accurate traffic prediction is a critical component of ITS, as it can help improve traffic management, avoid congested roads, and allocate resources more efficiently for connected vehicles. However, modeling traffic in a large and interconnected road network is challenging because of its complex spatio-temporal data. While classical statistics and machine learning methods have been used for traffic prediction, they have limited ability to handle complex traffic data, leading to unsatisfactory accuracy. In recent years, deep learning methods, such as Recurrent Neural Networks (RNNs) and Convolutional Neural Networks (CNNs), have shown superior capabilities for traffic prediction. However, most CNN-based models are built for Euclidean grid-structured data, while traffic road network data are irregular and better formatted as graph-structured data. Graph Convolutional Neural Networks (GCNs) have emerged to extend convolution operations to more general graph-structured data. This paper reviews recent developments in traffic prediction using deep learning, focusing on GCNs as a promising technique for handling irregular, graph-structured traffic data. We also propose a novel GCN-based method that leverages attention mechanisms to capture both local and long-range dependencies in traffic data with Kalman Filter, and we demonstrate its effectiveness through experiments on real-world datasets where the model achieved around 5% higher accuracy compared to the original model. © (2023). All Rights Reserved.

## **Analysing the Behaviour Intention of IOT Adoption Among Elderly NCD Patients in Malaysia**

Malarvizhi C.A.;  
Subramaniam S.S.;  
Jayashree S.

DOI:  
10.1109/CISES58720.2023.  
10183401

The prevalence of non-communicable diseases among the Malaysian elderly population has sharply increased. NCDs are the leading cause of premature death among Malaysian elders. The main goal of this study is to investigate the value of developing IoT-enabled applications to monitor the health status of elderly patients with NCDs. For examining IoT adoption intention, this study developed a framework based on the theory of planned behaviour (TPB), the Value-Belief-Norm (VBN) theory (TAM), and Rogers' theory of the diffusion of innovations and the use of technology model. The quantitative technique will be applied to this study. SmartPLS will examine the links between the key variables and the behavioural intention to use IoT among elderly NCD patients for primary data. However, we will apply the unit root test, Johansen Cointegration test, VECM, and Granger Causality Test for secondary data to examine the correlation between the variables. This research will help older adults and healthcare practitioners understand the significance of IoT in healthcare. The findings of this study are expected to produce meaningful insights that could help IoT-based network operators, governments, and implementers to enhance awareness among the elderly community by highlighting the benefits of implementing IoT technology. © 2023 IEEE.

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## **Analysis of Early Stroke Diagnosis Based on Brain Magnetic Resonance Imaging using Machine Learning**

Kandaya S.; Abdullah A.R.;  
Saad N.M.; Azman I.H.;  
Shair E.F.; Ali N.H.

DOI:  
10.37934/araset.32.3.24125  
5

Stroke causes paralysis resulting from a hemorrhage in the brain or blockage of blood flow to the brain. It is third leading cause of death in Malaysia, with at least 32 deaths per day, and poses a major challenge to Malaysia's health services. A recent study showed that he could save a patient's life if he received treatment within six hours of a stroke. Unfortunately, Malaysia is facing a shortage of neuroradiologists, hampering efforts to treat its growing number of stroke patients. In this research, used Magnetic Resonance Imaging which is better compare to CT scan and CBCT because MRI will produce more detailed images of soft tissues, ligaments and organs. So that, advanced imaging using magnetic resonance imaging (MRI) has gained more attention than conventional angiography in the diagnosis of acute stroke due to its high spatial resolution and fast scan times. Traditionally, diagnosis was made manually by neuroradiologists during a highly subjective and time-consuming task. Detecting collaterals from MRI images is a challenging task due to the presence of noise and artifacts, small size, and heterogeneous structure of vessels. By the way, this paper is mainly about the early diagnosis of stroke based on brain magnetic resonance imaging using machine learning. Based on the results, can see that the Fuzzy c-means (FCM) and Watershed Transformation (WT) segmentation of brain infarcts which are original image, output of guided filter, gradient magnitude image, output of watershed transform and final detected infarct with morphological operation. © 2023, Penerbit Akademia Baru. All rights reserved.

## **Antecedents of the responsible acquisition of computers behaviour: Integrating the theory of planned behaviour with the value-beliefnorm theory and the habits variable**

Loo W.H.; Yeow P.H.P.;  
Yen Y.Y.

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10.1371/journal.pone.02860  
22

The responsible behaviour of consumers that purchase green computers is a form of sustainable consumption, as green computers use less energy resulting in less CO<sub>2</sub> emissions and the use of fewer toxic metals and materials during their production. The research question is how to encourage such behaviour. Although prior research has provided some answers by investigating the antecedents of the behaviour, it has done so through a piecemeal approach from the angles of the theory of planned behaviour (TPB), the value-beliefnorm (VBN) theory, and habits. The present research aims to investigate the antecedents of the responsible acquisition of computers behaviour (RACB) among Malaysian consumers by integrating the TPB and the VBN theory with the habits variable. Hypotheses and a research framework were developed based on these theories and a survey questionnaire was used to collect information on the green computer purchase behaviour of computer owners aged 17 and over in Malaysia. A total of 1,000 usable surveys were completed and structural equation modelling was used to analyse the data collected. The findings reveal that the TPB, the VBN theory, and the habits variable can be integrated to explain RACB, which is formed when biospheric values trigger subjective norms that subsequently result in the formation of habits that lead to intentions of acquiring green computers and RACB. The study's findings show that although personal norms do not affect RACB, subjective norms affect ascriptions of responsibility, personal norms, and RACB. The findings provide insights to policymakers, NGOs, manufacturers, and marketers that can assist them in designing strategies for the effective promotion of RACB. © 2023 Loo et al.

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## **Application of Internet of Things (IoT) in Sustainable Supply Chain Management**

Khan Y.; Su'ud M.B.M.;  
Alam M.M.; Ahmad S.F.;  
Ahmad A.Y.A.B.; Khan N.

DOI: 10.3390/su15010694

The traditional supply chain system included smart objects to enhance intelligence, automation capabilities, and intelligent decision-making. Internet of Things (IoT) technologies are providing unprecedented opportunities to enhance efficiency and reduce the cost of the existing system of the supply chain. This article aims to study the prevailing supply chain system and explore the benefits obtained after smart objects and embedded networks of IoT are implanted. Short-range communication technologies, radio frequency identification (RFID), middleware, and cloud computing are extensively comprehended to conceptualize the smart supply chain management system. Moreover, manufacturers are achieving maximum benefits in terms of safety, cost, intelligent management of inventory, and decision-making. This study also offers concepts of smart carriage, loading/unloading, transportation, warehousing, and packaging for the secure distribution of products. Furthermore, the tracking of customers to convince them to make more purchases and the modification of shops with the assistance of the Internet of Things are thoroughly idealized. © 2022 by the authors.

## Application Of Mediation In Resolving Elderly Family Issues In Malaysia: Lessons From Canada And Australia

Jamaluddin S.Z.; Taher  
M.A.; Siong W.H.

DOI:  
10.21315/km2023.41.1.4

Malaysia is expected to be an ageing country by 2030 when 15% of her populace will be in the category of the elderly. The elderly will face various issues and challenges, such as finance along with abuse and neglect. Generally, like in other disputes, the legal mechanism is the resort for resolution. However, litigation is less preferred in this type of cases as it does not address the emotional distress suffered by the parties involved. As such, litigation is not a suitable method as it may break the relationship between the parties. Conversely, mediation, a non-adjudicative dispute resolution mechanism, is considered a potential method of dispute settlement since it is effective in addressing the issues in a family conflict involving the elderly. Due to its effectiveness, the application of mediation as a means of resolving disputes has gained global attention. Considering its effectiveness, some countries, such as Australia and Canada, apply mediation in resolving family issues involving the elderly. The use of mediation in family disputes is not new in Malaysia, however, it is yet to be applied in elderly family disputes. The objective of this article is to explore the scope of the application of mediation in elderly family issues. As such, this study adopts the qualitative approach of research where primary and secondary sources of data were gleaned from various statutes as well as existing literature, respectively. In order to underline the potential of mediation in dispute resolution, the experiences of Australia and Canada have been shared in this article. The finding indicates that due to its intrinsic excellence and usefulness, mediation can excel in resolving the disputes related to the elderly. Therefore, the paper recommends embracing mediation as a feasible dispute settlement mechanism involving the elderly in a family setting in Malaysia. © Penerbit Universiti Sains Malaysia, 2023.

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## Ultrafast erbium-doped fiber laser using electrodeposition coated MoS<sub>2</sub> thin film as saturable absorber

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Batalay M.; Harith Z.;  
Diblawe A.M.; Anand  
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DOI: 10.1088/2053-  
1591/ad144c

In this work, we have experimentally demonstrated the ultrafast laser in Erbium-doped fiber laser using MoS<sub>2</sub> as saturable absorber. The MoS<sub>2</sub> SA in this work is prepared by bottom-up method. A three-electrode configuration is used to perform the electrodeposition to coat the MoS<sub>2</sub> onto conductive film. The MoS<sub>2</sub> saturable absorber is incorporated into the fiber laser system to induce mode-locking operation centered at 1560.8 nm. The proposed saturable absorber has achieved pulse width of 1.47 ps, with highest average pulse energy of 0.44 nJ and repetition rate of 1.88 MHz. The venture of electrodeposition coated MoS<sub>2</sub> thin film as saturable absorber is potentially to pave the foundation toward the sustainable industry, innovation and infrastructure. © 2023 The Author(s). Published by IOP Publishing Ltd.

## **An Exploratory Bibliometric Analysis of the Literature on Age of Information- Aware Unmanned Aerial Vehicles Aided Communication**

Bukar U.A.; Sayeed M.S.;  
Razak S.F.A.; Yogarayan  
S.; Amodu O.A.

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Real-time status updates require more frequent updates with fresh information. This study investigates the applications and research potential of unmanned aerial vehicles (UAV) for achieving information freshness in time-critical applications to emphasize important aspects of this subject based on a thorough statistical analysis of current research trends. Particularly using the Scopus database, a bibliometric analysis is conducted on 122 articles written in English and published between 2018 and 2023. This analysis provides a knowledge map of past research on this subject and the journey so far, especially concerning major subjects, patterns of citations, publication activities, and the state of cooperation among contributors throughout the UAV-information freshness research history. According to the findings, applying various methods, such as deep reinforcement learning and optimization algorithms, has been evident. In contrast, energy efficiency and harvesting, trajectory planning and design, and scheduling are issues attracting researchers' interest. Finally, the study offers implications and recommendations such as fostering interdisciplinary collaboration, furthering and improving on DRL and optimization algorithms, addressing energy efficiency and harvesting, enhancing trajectory planning and design, emphasizing scheduling strategies, and bridging the gap between research and practice. © 2023 Slovene Society Informatika. All rights reserved.

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## **Big Data Analytics Implications on Central Banking Green Technological Progress**

Ahmed E.M.

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69

This paper examines big data analytics implications on the central banking financial system's technological progress. A digital technological progress framework and model is established to analyze the economy's aggregate supply via covering the monetary policy, big data analytics, pollutants emissions as independent variables and the economy's aggregate demand as a moderating variable in a modified extensive growth theory framework and model to compute the productivity indicators and the total factor productivity (TFP) as the central banking technological progress that combined the mentioned variables qualities contribution. Besides, data analytics positive and negative externalities that include data analytics shortcomings as unpriced undesirable output in the form of cybersecurity and pollutants' emissions among other proxies are internalized in the framework and the model to integrate the digital technology innovation with digital technology shortcomings and climate change. This revised extensive theory framework and model is a remarkable technique comprehensive of the technological progress matters and sustainable economic development and is considered one of the most important sustainable development and long-run economic growth proportions in the central banking financial system functions to manage the economy's aggregate supply and demand that unnoticed by previous studies. © 2023 World Scientific Publishing Company.

## **Blackhole attacks in internet of things networks: a review**

Kamis N.H.; Yassin W.;  
Abdollah M.F.; Razak  
S.F.A.; Yogarayan S.

DOI:  
10.11591/ijeecs.v30.i2.pp10  
80-1090

The internet of things (IoT) is one of data revolution area and is the following extraordinary mechanical jump after the internet. In terms of IoT, it is expected that electronic gadgets that are used on a regular basis would be connected to the current of the internet. IPv6 over low-power wireless personal area networks (6LoWPAN) is a one of IPv6 header pressure technology, and accordingly, it is vulnerable to attack. The IoT is a combination of devices with restricted resource assets like memory, battery power, and computational capability. To solve this, RPL or routing protocol for low power Lossy network is deploy by utilizing a distance vector scheme. One of denial of service (Dos) attack to RPL network is blackhole attack in which the assailant endeavors to become a parent by drawing in a critical volume of traffic to it and drop all packets. In this paper, we discuss research on numerous attacks and current protection methods, focusing on the blackhole attack. There is also discussion of challenge, open research issues and future perspectives in RPL security. Furthermore, research on blackhole attacks and specific detection technique proposed in the literature is also been presented. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

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## **Blending a sweet pill to swallow with TRIZ and industry talks for enhanced learning during the COVID-19 pandemic**

Ng P.K.; Koo V.C.; Ng Y.J.;  
Yeow J.A.

DOI: 10.3233/HSM-220080

**BACKGROUND:** While studies have investigated relationships among learning motivation, social presence, and cognitive presence, there appear to be no studies on the inclusion of industry talks and the theory of inventive problem-solving (TRIZ) in strengthening engineering students' learning motivation, social presence, and cognitive presence within a blended learning setting. **OBJECTIVE:** This study investigated the influence of industry talks and TRIZ on learning motivation, social presence, and cognitive presence in a blended learning environment. **METHODS:** Data samples were obtained from 98 engineering students in a blended learning course and analysed using Spearman's correlation test, regression, ANOVA, and t-test. **RESULTS:** Findings suggested that TRIZ and industry talks strongly, positively, and significantly correlated with learning motivation, social presence, and cognitive presence. A well-rounded learning experience compounded of TRIZ and industry talks significantly affected learning motivation, social presence, and cognitive presence, thereby enhancing students' programme outcome (PO) achievement. **CONCLUSIONS:** These findings can be attributed to the students' independent learning capabilities with TRIZ and industry talks. Analogically, embracing TRIZ and industry talks helps turn blended learning into a 'sweet instead of bitter pill to swallow' for engineering students in the face of the COVID-19 pandemic. © 2023 - IOS Press. All rights reserved.

## **Blockchain Technology for Tourism Post COVID- 19**

Bakri M.N.B.; Neo H.-F.;  
Teo C.-C.

DOI:  
10.18080/jtde.v11n3.764

During the pandemic, the tourism industry was one of the most severely impacted sectors. As vaccines are now widely available, each government is working to develop a system that can generate a digital vaccine certificate and PCR lab test result to verify that a person has been fully vaccinated or has a negative PCR test result, in order to allow them to enter business premises, travel overseas or cross state borders. However, the use of centralised systems in the development of the digital COVID-19 pass system results in a number of challenges, including the system's high susceptibility to failures, sluggish and inefficient information transmission, and vulnerability. The goal of this research is to offer a new digital COVID-19 pass based on the proposed "SmartHealthCard" blockchain technology. SmartHealthCard is a decentralised application (dApp) encrypting and hashing user data and safely storing it in a distributed database. Privacy preservation, GDPR compliance, self-sovereignty, KYC compliance and data integrity are featured. This initiative has the potential to benefit the public, healthcare professionals, service providers and the government. SmartHealthCard enables quick verification of tamper-proof COVID-19 tests/vaccines, aiding in COVID-19 transmission control while respecting the user's right to privacy. Copyright © 2023.

## **Brain cone beam computed tomography image analysis using ResNet50 for collateral circulation classification**

Ali N.H.; Abdullah A.R.;  
Saad N.M.; Muda A.S.

DOI:  
10.11591/ijece.v13i5.pp5843-5852

Treatment of stroke patients can be effectively carried out with the help of collateral circulation performance. Collateral circulation scoring as it is now used is dependent on visual inspection, which can lead to an inter- and intra-rater discrepancy. In this study, a collateral circulation classification using the ResNet50 was analyzed by using cone beam computed tomography (CBCT) images for the ischemic stroke patient. The remarkable performance of deep learning classification helps neuroradiologists with fast image classification. A pre-trained deep network ResNet50 was applied to extract robust features and learn the structure of CBCT images in their convolutional layers. Next, the classification layer of the ResNet50 was performed into binary classification as "good" and "poor" classes. The images were divided by 80:20 for training and testing. The empirical results support the claim that the application of ResNet50 offers consistent accuracy, sensitivity, and specificity values. The performance value of the classification accuracy was 76.79%. The deep learning approach was employed to unveil how biological image analysis could generate incredibly dependable and repeatable outcomes. The experiments performed on CBCT images evidenced that the proposed ResNet50 using convolutional neural network (CNN) architecture is indeed effective in classifying collateral circulation. © 2023 Institute of Advanced Engineering and Science. All rights reserved.



## Breast cancer classification with histopathological image based on machine learning

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Pang Y.H.; Yap H.Y.

DOI:  
10.11591/ijece.v13i5.pp5885-5897

Breast cancer represents one of the most common reasons for death in the worldwide. It has a substantially higher death rate than other types of cancer. Early detection can enhance the chances of receiving proper treatment and survival. In order to address this problem, this work has provided a convolutional neural network (CNN) deep learning (DL) based model on the classification that may be used to differentiate breast cancer histopathology images as benign or malignant. Besides that, five different types of pre-trained CNN architectures have been used to investigate the performance of the model to solve this problem which are the residual neural network-50 (ResNet-50), visual geometry group-19 (VGG-19), Inception-V3, and AlexNet while the ResNet-50 is also functions as a feature extractor to retrieve information from images and passed them to machine learning algorithms, in this case, a random forest (RF) and k-nearest neighbors (KNN) are employed for classification. In this paper, experiments are done using the BreakHis public dataset. As a result, the ResNet-50 network has the highest test accuracy of 97% to classify breast cancer images. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

## Broadband Plasmonic Metamaterial Optical Absorber for the Visible to Near-Infrared Region

Musa A.; Alam T.; Islam M.T.; Hakim M.L.; Rmili H.; Alshammari A.S.; Islam M.S.; Soliman M.S.

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An oblique angle and polarization insensitive metamaterial absorber (MA) are highly desired for the visible and infrared optical applications like, wave energy harvesting, optical filters, and detecting thermal leaks and electrical defects. In this paper, a multi-layered MA consisting of two layers of tungsten resonators on a silicon dioxide substrate, coated with additional SiO<sub>2</sub> materials is investigated. The unit cell size of the MA is  $0.5\lambda \times 0.5\lambda \times 0.8\lambda$ , at the lowest wavelength. The proposed MA offers an average absorption of 92% from 400 nm to 2400 nm with stable oblique incident angles up to 45°. The structure also achieves polarization insensitivity at the entire visible and near-infrared spectrum. Moreover, the MA is found highly compatible for solar absorber applications with high  $y_{AAM1.5}$ . The structure is also compatible for filter application in optical communication system by modifying the plasmonic nano structure. The modified structure can block the wavelengths of the visible band (450 nm to 800 nm) and transmit optical communication bands (800 to 1675 nm). These versatile absorption and filtering performance make the proposed design highly potential for solar energy harvesting, photodetection, thermal imaging, photo-trapping, and optical communications applications. © 2023 by the authors.

## **Bumiputera Corporate Equity Ownership and Value Relevance within the Integrated Reporting Framework**

Jaffar N.; Alias N.;  
Sulaiman N.A.; Selamat Z.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85156126966&partnerID=40&md5=f7f5b17d2050d5b746ced4b7353fcace>

The purpose of this study was to examine the effect of disclosure of information on Bumiputera corporate equity ownership on value relevance of corporate information in the Malaysian companies within the Integrated Reporting Framework. Data were collected from annual reports of 603 companies for the year 2015. These companies were listed on the Main Market of Bursa Malaysia. Results showed that the disclosure of information regarding the Bumiputera corporate equity ownership, information related to three Integrated Report content elements, namely organizational overview and external environment, company's outlook, and basis of presentation; and total assets and book value were found to affect the firm value significantly and positively. However, the disclosure of the information concerning basis of presentation had a negative effect on value relevance of the companies' corporate information. The findings offer evidence pertaining the potential impact of information related to Bumiputera corporate equity ownership and content elements of an integrated report on the value relevance of corporate information in Malaysia. © 2023, Universiti Teknologi Mara. All rights reserved.

## **Business Category Classification via Indistinctive Satellite Image Analysis Using Deep Learning**

Suvon I.H.; Loh Y.P.;  
Hashim N.; Mohd-Isa W.N.;  
Ting C.-Y.; Ghauth K.I.;  
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W.R.

DOI:  
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Satellite image analysis has numerous useful applications in various domains. Extracting their visual information has been made easier using remote sensing and deep learning technologies that intelligently interpret clear visual cues. However, satellite information has the potential for more complex tasks, such as recommending business locations and categories based on the implicit patterns and structures of the regions of interest. Nonetheless, this task is significantly more challenging due to the absence of obvious visual cues and the highly similar appearance of each location. This study aims to analyze satellite image similarity between business class categories and investigate the capabilities of state-of-the-art deep learning models for learning non-obvious visual cues. Specifically, a satellite image dataset is constructed using business locations and annotated with the business categories for image structural similarity analysis, followed by business category classification via fine-tuning of deep learning classifiers. The models are then analyzed by visualizing the features learned to determine if they could capture hidden information for such a task. Experiments show that business locations have significantly high SSIM regardless of categories, and deep learning models only recorded a top accuracy of 60%. However, feature visualization using Grad-CAM shows that the models learn biased features and disregard highly informative details such as roads. It is concluded that typical learning models and strategies are insufficient to effectively solve this complex visual problem; thus, further research should be done to formulate solutions for such non-obvious classifications with the potential to support business recommendation applications. © 2023. IJASEIT is licensed under a Creative Commons Attribution-Share Alike 4.0 International License.

## **Business network and balanced scorecard: an analysis of small and medium enterprises in Malaysia**

Abdul Rahman A.A.; Chong P.L.; Ong T.S.; Teh B.H.; Ong T.C.

DOI: 10.1108/AGJSR-10-2022-0218

**Purpose:** The aim of this paper is to characterise the association between business network and the balanced scorecard used by Malaysian small and medium enterprises (SMEs) as a method for assessing firm efficiency. The business network takes into account both the dimensions of stability and efficiency. The business network can help SMEs, with fewer resources to remain competitive. By having a secure business network, the performance of SMEs in Malaysia can be further improved. A business network can facilitate swift coordination amongst distant geographies to create new competitive advantages by accessing market segments, resources as well as building strategic business alliances. **Design/methodology/approach:** A total of 404 sets of data collected by using stratified random sampling and structured questionnaire as an instrument. The list of SMEs collected from the Malaysia Foreign Trade Growth Corporate Directory (MATRADE) directories. Structural equation modelling (SEM) was utilised to analyse the data. **Findings:** The findings show that the business network plays a role in the balanced scorecard (BSC) outcomes of Malaysian SMEs. **Originality/value:** This article provides the owners and managers with an awareness to rapidly achieve the company's efficiency. Finally, the new article often has some consequences for decision-makers and regulators. © 2023, Abdul Aziz Abdul Rahman, Poh Ling Chong, Tze San Ong, Boon Heng Teh and Tze Chin Ong.

## **Collateral Circulation Classification Based on Cone Beam Computed Tomography Images using ResNet18 Convolutional Neural Network**

Ali N.H.; Abdullah A.R.; Saad N.M.; Muda A.S..

DOI:  
10.14569/IJACSA.2023.0140820

Collateral circulation is an arterial anastomotic channel that supply nutrient perfusion to areas of the brain. It happens when there is an existence of disruption of regular sources of flow due to an ischemic stroke. The most recent method, Cone Beam Computed Tomography (CBCT) neuroimaging is able to provide specific details regarding the extent and adequacy of collaterals. The current approaches for collateral circulation classification are based on manual observation and lead to inter and intra-rater inconsistency. This paper presented a 2-class automatic classification that is recently growing very fast in artificial intelligence disciplines. The two classes will differentiate between good and poor collateral circulation. A pre-trained convolutional neural network (CNN), namely ResNet18, has been used to learn features and train using 4368 CBCT images. Initially, the dataset is prepared, labeled and augmented. Then the images were transferred to be trained using the ResNet18 method with certain specifications. The algorithm performance was then evaluated using metrics in terms of accuracy, sensitivity, specificity, F1 score and precision on the CBCT images to classify collateral circulation accurately. The findings can automate collateral circulation classification to ease the limitations of standard clinical practice. It is a convincing method that supports neuroradiologists in assessing clinical scans and helps neuroradiologists in clinical decisions about stroke treatment. © (2023), (Science and Information Organization). All Rights Reserved.

## **Can Inclusive Entrepreneurialism Be a Solution for Unemployed Female Graduates? A Study on Inclusive Entrepreneurial Intention**

Sarhan M.L.; Ab. Aziz K.

DOI: 10.1108/AGJSR-10-2022-0218

Recent reports highlighted a worrying trend in Malaysia where the number of female graduates has increased but at the same time there is a lower number of female workers. Particularly, in 2022, most unemployed graduates are women, accounting for 54.2% of the total, according to the Department of Statistics Malaysia (DoSM). This increases the gender gap in the workforce and subsequently decreases female participation towards nation-building and economic growth. Meanwhile, studies have shown that inclusivity can significantly affect the reduction of unemployment rates and increase re-employment. Thus, this study suggests that "Inclusive Entrepreneurship" can be a viable solution to the problem observed, as entrepreneurship might be a more attractive option than employment for female graduates. This paper aims to explore the factors influencing inclusive entrepreneurial intention among female graduates in Malaysia. Specifically, this study employed the theory of planned behaviour (TPB) and opted for a quantitative exploratory study using the conductive method. The collected survey sample of 227 female students in Malaysia was analysed using PLS-SEM. The framework structure is based on a combination of formatively and reflectively measured variables. The results indicated that attitude, perceived behavioural control and inclusive innovativeness have significant relationships to the inclusive entrepreneurial intention of female graduates in Malaysia. These insights can lead to the formulation of effective policies and programs to encourage as well as enable female graduates to contribute towards the nation's development via inclusive entrepreneurialism. © 2023 by the authors.

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## **Can environmental literacy and integrated behavioral factors encourage green practices at home? Evidence from Malaysia**

Law J.-W.; Lye C.-T.; Ng T.-H.

DOI:  
10.1016/j.clrc.2023.100134

This study integrates environmental literacy and integrated behavioral model to address the reduce, reuse, and recycle (3Rs) issues of households in Malaysia. A total of 166 questionnaires were collected from the top five states with the highest number of households and analyzed using the partial least squares structural equation modeling approach. The results show that personal agency and attitude are important factors in motivating intentions to practice the 3Rs, while environmental literacy, intention, knowledge and skills, habit, and having no or minimal environmental constraints can encourage the 3Rs behavior. The result also shows that environmental literacy can be a moderator that strengthens 3Rs intention and behavior through attitude and perceived norms. The finding not only corroborates the significant role of behavioral factors and environmental education but also shows how environmental literacy is associated with behavioral factors in improving green practices at home. The finding highlights the need for a more comprehensive environmental education curriculum, along with increased awareness campaigns, support, and facilities for the promotion of the 3Rs behavior. © 2023 The Authors

## **Carbon dynamics in agricultural greenhouse gas emissions and removals: a comprehensive review**

Kamyab H.;  
Saberikamarposhti M.;  
Hashim H.; Yusuf M.

DOI: 10.1007/s42823-023-00647-4

Agriculture is a pivotal player in the climate change narrative, contributing to greenhouse gas (GHG) emissions while offering potential mitigation solutions. This study delved into agriculture's climate impact. It comprehensively analysed emissions from diverse agricultural sources, carbon sequestration possibilities, and the repercussions of agricultural emissions on climate and ecosystems. The study began by contextualising the historical and societal importance of agricultural GHG emissions within the broader climate change discourse. It then discussed into GHG emitted from agricultural activities, examining carbon dioxide, methane, and nitrous oxide emissions individually, including their sources and mitigation strategies. This research extended beyond emissions, scrutinising their effects on climate change and potential feedback loops in agricultural systems. It underscored the importance of considering both the positive and negative implications of emissions reduction policies in agriculture. In addition, the review explored various avenues for mitigating agricultural emissions and categorised them as sustainable agricultural practices, improved livestock management, and precision agriculture. Within each category, different subsections explain innovative methods and technologies that promise emissions reduction while enhancing agricultural sustainability. Furthermore, the study addressed carbon sequestration and removal in agriculture, focussing on soil carbon sequestration, afforestation, and reforestation. It highlighted agriculture's potential not only to reduce emissions, but also to serve as a carbon reservoir, lowering overall GHG impact. The research also scrutinised the multifaceted nature of agriculture, examining the obstacles hindering mitigation strategies, including socioeconomic constraints and regulatory hurdles. This study emphasises the need for equitable and accessible solutions, especially for smallholder farmers. It envisioned the future of agricultural emissions reduction, emphasising the advancements in measurement, climate-smart agricultural technologies, and cross-sectoral collaboration. It highlighted agriculture's role in achieving sustainability and resilience amid a warming world, advocating collective efforts and innovative approaches. In summary, this comprehensive analysis recognised agriculture's capacity to mitigate emissions while safeguarding food security, biodiversity, and sustainable development. It presents a compelling vision of agriculture as a driver of a sustainable and resilient future. Graphical abstract: [Figure not available: see fulltext.] © 2023, The Author(s), under exclusive licence to Korean Carbon Society.

## **Comparative performance study of HC-12, nRF24L01, and XBee for vehicular communication**

Yogarayan S.; Razak S.F.A.; Abdullah M.F.A.; Azman A.; Arultas V.; Raman S.S.

DOI:  
10.11591/ijict.v12i1.pp54-61

In recent times, the volume of traffic congestion has been rapidly growing on roads. These days the necessity of having safe transportation and journey is essential. Thus, vehicle communication could be a possible solution to enhance safe transit. Vehicular communications provide a wide range of applications with different characteristics, namely vehicle and vehicle (V2V) communications. Every year, traffic accidents kill many people worldwide, and many people have been injured. V2V communication enables vehicles to communicate with each other to provide safety and convenience to drivers. Therefore, this paper explores a direction to develop a conceptual approach to V2V communication with HC-12, nRF24L01, and XBee. The study aims to analyze and evaluate the communication range that may contribute to the future road transportation system. © 2023, Intelktual Pustaka Media Utama. All rights reserved.

## **Comparative Study of Machine Learning Algorithms in Classifying HRV for the Driver's Physiological Condition**

Razak S.F.A.; Sayed Ismail S.N.M.; Yogarayan S.; Abdullah M.F.A.; Kamis N.H.; Aziz A.A.

DOI: 10.28991/CEJ-2023-09-09-013

Heart Rate Variability (HRV) may be used as a psychological marker to assess drivers' states from physiological signals such as an electrocardiogram (ECG), electroencephalogram (EEG), and photoplethysmography (PPG). This paper reviews HRV acquisition methods from drivers and machine learning approaches for driver cardiac health based on HRV classification. The study examines four publicly available ECG datasets and analyzes their HRV features, including time domain, frequency domain, short-term measures, and a combination of time and frequency domains. Eight machine learning classifiers, namely K-Nearest Neighbor, Decision Tree, Naive Bayes, Linear Discriminant Analysis, Support Vector Machine, Random Forest, Gradient Boost, and Adaboost, were used to determine whether the driver's state is normal or abnormal. The results show that K-Nearest Neighbor and Decision Tree classifiers had the highest accuracy at 92.86%. The study concludes by assessing the performance of machine learning algorithms in classifying HRV for the driver's physiological condition using the Man-Whitney U test in terms of accuracy and F1 score. We have statistical evidence to support that the prediction quality is different when HRV analysis applies these three sets: (i) time domain measures or frequency domain measures; (ii) frequency domain measures or short-term measures; and (iii) combining time and frequency domains or only frequency domains. © 2023 by the authors.

## **Determinants of Job Satisfaction Among Work-From-Home Malaysians During Pandemic: Application of Job Demands-Resources Model**

MIN C.M.; CHOO A.C.P.

DOI:  
10.47836/ijeam.17.2.01

Work From Home (WFH) or telework is gaining its popularity all over the world, especially during the COVID-19 pandemic. The pandemic has forced the organizations to embark on virtual work environment even though many were not prepared for such changes. This study examined the determinants of job satisfaction among the new home workers during the COVID-19 pandemic in Malaysia by applying the Job Demands-Resources (JD-R) Model. The data were collected from 370 respondents across various industries through online questionnaire survey. Out of the 370 respondents, 30.5% of the respondents specializing in education/training, 24.6% are in accounting/banking/finance, 15.9% are in computer/IT and the remaining 29% are from other fields such as administration/HR, marketing/sales, manufacturing, engineering, art/media/communication, sciences, services and others. The findings based on the Structural Equation Modelling (SEM) analysis suggests that social isolation, suitability of home workspace, organizational supports, job autonomy and perceived self-competency have significant influences on employees' job satisfaction while working from home. This study offers valuable insights to organizations regarding sustainable human resource management strategies during the pandemic. It suggests that various forms of organizational support should be extended to employees during times of difficulties and uncertainties. © 2023 International Journal of Economics and Management

## **Design of an efficient solar energy harvesting system for wireless power communication**

Pay E.Y.; Tiang J.J.;  
Muhammad S.; Chuah T.C.

DOI: 10.1002/jnm.3054

This paper proposes the design of an efficient ambient solar energy harvesting (SEH) system with enhanced protection for low-power devices. The proposed SEH system is designed and fabricated on a 1.6 mm Flame Retardant 4 (FR4) substrate using EasyEDA software. The harvester consists of a 3 W monocrystalline solar panel, a solar charger module with maximum power point tracking, a lithium-ion rechargeable battery and a battery protection integrated circuit, and a DC-DC converter. Each of the SEH system component modules is optimized for better performance. The proposed energy harvester achieves a peak power conversion efficiency of 81.22% with a total output power of 2.35 W by using a CN3791 battery charger module. This approach is cost-effective, highly sustainable, and virtually maintenance-free. It can be deployed in various low-powered devices such as wireless sensor network nodes and Internet of Things microcontrollers to extend their battery lifetimes, thereby achieving environmental-friendly and sustainable energy harvesting. © 2022 John Wiley & Sons Ltd.

**ComSense-CNN:  
acoustic event  
classification via 1D  
convolutional neural  
network with  
compressed sensing**

Tan P.S.; Lim K.M.; Tan  
C.H.; Lee C.P.; Kwek L.C.

DOI: 10.1007/s11760-022-  
02281-5

Sound plays an important role in human daily life as humans use sound to communicate with each other and to understand the events occurring in the surroundings. This has prompted the researchers to further study on how to automatically identify the event that is happening by analyzing the acoustic signal. This paper presents a deep learning model enhanced by compressed sensing techniques for acoustic event classification. The compressed sensing first transforms the input acoustic signal into a reconstructed signal to reduce the noise in the input acoustic signal. The reconstructed signals are then fed into a 1-dimensional convolutional neural network (1D-CNN) to train a deep learning model for the acoustic event classification. In addition, the dropout regularization is leveraged in the 1D-CNN to mitigate the overfitting problems. The proposed compressed sensing with 1D-CNN was evaluated on three benchmark datasets, namely Soundscapes1, Soundscapes2, and UrbanSound8K, and achieved F1-scores of 80.5%, 81.1%, and 69.2%, respectively. © 2022, The Author(s), under exclusive licence to Springer-Verlag London Ltd., part of Springer Nature.

**Corporate  
Sustainability  
Development Strategy  
and Corporate  
Environmental  
Governance—The  
Moderating Role of  
Corporate  
Environmental  
Investments**

Ao X.; Ong T.S.; Teh B.H.

DOI:  
10.3390/ijerph20054528

Environmental degradation and ecological devastation have become widespread global concerns in recent years as a result of the expansion of the international economy. China's rapid economic development has been accompanied by a sloppy economic growth model that has damaged the local ecological environment. The Chinese government intends to improve the ecological environment by the end of 2020 in an effort to direct and improve these environmental issues. The strictest environmental laws became effective in 2015. In light of this, this research uses panel data analysis to examine the environmental strategy and environmental governance of Chinese corporations. This article analyses 14,512 samples of listed mainland Chinese enterprises from 2015 to 2020. This research investigates the connection between Corporate Sustainability Development Strategy and Corporate Environmental Governance, as well as the moderating effect of Corporate Environmental Investments. © 2023 by the authors.



## **COVID-19 Chest X-Ray Classification Using Compact Convolutional Transformer**

Tan X.H.; Yan Lim J.; Lim K.M.; Lee C.P.

DOI:  
10.1109/ICoICT58202.2023.10262549

The outbreak of Covid-19 in 2019 had a significant impact worldwide, causing long-term breathing problems in many affected individuals. Some people may experience white spots on their lungs after recovering from Covid-19, which can be difficult to identify. One promising approach for identifying abnormal lungs is through image classification. In this work, we utilize three datasets for image classification: the COVID-19 Radiography Dataset, the Chest X-ray Dataset, and the COVID-19 Dataset. To achieve accurate classification, a pre-trained Compact Convolution Transformer (CCT) has been utilized with transfer learning. Our results show that the COVID-19 Radiography Dataset achieved an accuracy of 89.28%, the Chest X-ray Dataset achieved 95.11% accuracy, and the COVID-19 X-ray Dataset achieved an impressive 97.50% accuracy. These findings demonstrate the potential of using image classification to identify abnormal lungs and pave the way for further research in this area. © 2023 IEEE.

## **Does Corporate Social Responsibility Reporting/ Communication Matter? Employees' Perception of the Corporate Social Responsibility**

Chan T.J.; Huam H.T.;  
Hasan N.A.M.

DOI:  
10.31620/JCCC.06.23/07

Corporate social responsibility (CSR) has become an area of research in strategic communication management. However, most studies are focused on CSR practices, but the perception of internal stakeholders (employees) on how they perceived CSR practices by the company as well as the study of CSR reporting/ communication were sparse in the literature. Thus, this study aims to examine the mediating role of CSR reporting/ communication on the relationship between employees' perception of the CSR and competitive advantage of banking companies in Malaysia. The study applied Resource-Based Views (RBV) theory to guide the study. A quantitative (survey) design was utilized and 174 useful responses were obtained from the employees of the banking corporations understudied. The findings found that perception of CSR influences the competitive advantage and CSR reporting/communication positively. Besides, the linkage between CSR reporting/ communication and competitive advantage was also found significantly related, and the study empirically established that CSR reporting/ communication is a significant mediator in the relationship between perceived CSR and competitive advantage. The study has urged the management of the banking corporations to actively publish their CSR initiatives through the annual reports, official company website, and social media as a way to communicate the company's sustainable initiatives to their stakeholders which makes them distinctive compared to their rivals. Conclusion, implications, and future study suggestions were discussed. © 2023, Journal of Content, Community and Communication. All Rights Reserved.

## COVID-19 Chest X-Ray Classification Using Residual Network

Tan X.H.; Lim J.Y.; Lim K.M.; Lee C.P.

DOI:  
10.1109/ICoICT58202.2023.10262734

In 2019, the Covid-19 pandemic has spread across the globe and causing significant disruptions to daily life. Those who have tested positive for Covid-19 may experience long-term respiratory problems as the virus can damage the lungs. Specifically, patients who have recovered from Covid-19 may develop white spots on their lungs. This can be difficult to distinguish from normal lung tissue. Consequently, researchers have conducted extensive studies on image classification of Covid-19 chest x-rays, which has become a popular topic of investigation over the past two years. In this research, four datasets were utilized for image classification including COVID-19 Radiography, Chest X-ray, COVID-19, and CoronaHack datasets. All these datasets were sourced from Kaggle. The pre-trained ResNet152 model was used in conjunction with a transfer learning technique. Results indicated that the pre-trained ResNet152 with early stopping provided the highest accuracy among the techniques tested. In this research, the COVID-19 Radiography dataset achieved an accuracy of 95.61%, while the Chest X-ray dataset achieved an accuracy of 97.59%. CoronaHack dataset and COVID-19 X-ray dataset achieved accuracies of 93.59% and 100%, respectively. © 2023 IEEE.

## COVID-19 Contact Tracing Using Low Calibrated Transmission Power from BLE—Approach and Algorithm Experimentation

Zaw T.O.K.; Muthaiyah S.; Sehgar M.M.; Arumugam G.R.M.

DOI: 10.1007/978-981-19-6634-7\_2

Within a short period of time, the highly infectious COVID-19 virus has progressed into a pandemic which has forced countries to develop contact tracing solutions for closer monitoring of its further spread into the society. Bluetooth low energy (BLE) has been extensively adopted to implement contact tracing focusing mainly on utilizing received signal strength indicator (RSSI) for its distance estimation toward close contact identification (CCI). Nevertheless, when observed closely, many of these solutions were not able to accurately carry out the contact tracing as required by Centers for Disease Control (CDC) and Prevention. The provisions set were distance of within 6-ft (~ 2 m) and period of no less than 15 min for close contact identification. This is mainly because usage of RSSI is highly unstable and volatile. In closing the gap, we proposed a novel approach that utilizes low calibrated transmission power (Tx) employing nRF52832 BLE chipset as wearables, in which, at a distance of greater than 2 m, no close contact will be detected making the accuracy to high and low error distance estimation under ideal condition. Algorithm in establishing close contacts is also demonstrated with complete experimentation. Results show that our proposed solution has maximum error of 0.3209 m in distance estimation of 2 m and 71.43% accuracy in CCI with 4 devices and distance of  $2 \pm 0.3$  m consideration. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

## COVID-19 Identification and Analysis with CT Scan Images using DenseNet and Support Vector Machine

Lim Y.J.; Lim K.M.; Lee C.P.; Chang R.K.Y.; Lim J.Y.

DOI:  
10.1109/ICoICT58202.2023.10262543

Medical image analysis is the process of analyzing and interpreting medical images to diagnose diseases, assess disease progression, surgical planning and guide medical treatments by extracting clinically useful information from medical images. Medical image analysis serves an important role in applications in healthcare. With the advancement of deep learning techniques, the utilization of artificial intelligence for medical image analysis has experienced a notable surge, leading to improved accuracy and efficiency in diagnoses and treatment planning. In the present work, a pre-trained transfer learning model, DenseNet201 as a feature extractor, with a classifier of Support Vector Machine (SVM) is aimed to address the classification challenge associated with COVID-19 chest CT images. The evaluation of the proposed DenseNet201-SVM model has been conducted on three benchmark datasets: SARS-CoV-2 CT images, COVID-CT and Integrative CT images and CFs for COVID-19 (iCTCF) datasets and achieved accuracy of 98.99%, 93.33% and 99.25% respectively. The total number of images for each dataset are 2482, 746 and 19685. There are only two classes in first and second datasets, whereas the third dataset has three classes. The result is compared with other existing methods and the proposed DenseNet201-SVM model has outperformed other methods. © 2023 IEEE.

## COVID-19 pandemic: what drives consumers' willingness to purchase organic food?

Pang S.M.; Tan B.C.; Lau T.C.

DOI:  
10.26656/fr.2017.7(1).898

The consumption of organic food is increasing globally due to heightening awareness of its benefits in terms of nutrients such as antioxidants and minerals as compared to conventional food. Organic food is also safer to consume as it is farmed without using human-made or artificial chemical fertilizers, pesticides, growth hormones or regulators and feed additives. Nevertheless, very few studies have been conducted to understand the demand side in purchasing organic foods, especially during the COVID-19 outbreak. Hence, this study aimed to investigate the underlying factors that drive consumers' willingness to purchase organic foods during the inevitable challenge of the COVID-19 pandemic, based on the two underpinning theories; Theory of Reasoned Action (TRA) and the Protection Motivation Theory (PMT). A questionnaire-based survey was distributed using WhatsApp messaging to 100 respondents as this method was deemed safer compared to the face-to-face method during the pandemic. PLS-SEM was employed to test the structural relationship of the constructs proposed in the model. The results indicated that response efficacy, attitudes, and subjective norm had a significant influence on consumers' willingness to purchase organic food. The remaining constructs based on the PMT model had no impact on willingness. Further investigation revealed that response efficacy was the most important factor driving consumers to purchase organic food during the COVID-19 pandemic. © 2023 The Authors. Published by Rynnye Lyan Resources.

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Tan X.H.; Lim J.Y.; Lim K.M.; Lee C.P.

DOI:  
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Within a short period of time, the highly infectious COVID-19 virus has progressed into a pandemic which has forced countries to develop contact tracing solutions for closer monitoring of its further spread into the society. Bluetooth low energy (BLE) has been extensively adopted to implement contact tracing focusing mainly on utilizing received signal strength indicator (RSSI) for its distance estimation toward close contact identification (CCI). Nevertheless, when observed closely, many of these solutions were not able to accurately carry out the contact tracing as required by Centers for Disease Control (CDC) and Prevention. The provisions set were distance of within 6-ft (~ 2 m) and period of no less than 15 min for close contact identification. This is mainly because usage of RSSI is highly unstable and volatile. In closing the gap, we proposed a novel approach that utilizes low calibrated transmission power (Tx) employing nRF52832 BLE chipset as wearables, in which, at a distance of greater than 2 m, no close contact will be detected making the accuracy to high and low error distance estimation under ideal condition. Algorithm in establishing close contacts is also demonstrated with complete experimentation. Results show that our proposed solution has maximum error of 0.3209 m in distance estimation of 2 m and 71.43% accuracy in CCI with 4 devices and distance of  $2 \pm 0.3$  m consideration. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

## COVID-19 vaccine acceptance among Malaysians

Tan Y.F.; Leow M.C.; Ong L.Y.

DOI:  
10.1109/ICoICT58202.2023.10262543

Since the first declaration of the coronavirus (COVID-19) outbreak, massive number of efforts have been taken to develop and deploy the COVID-19 vaccines. However, there might be hesitation towards the vaccines as there were reports of side effects. This study evaluates the COVID-19 vaccination acceptance of the Malaysian public via an online survey hosted in a COVID-19 vaccination acceptance roadshow event. This study gives an insight to the level of vaccination acceptance of the Malaysian public, while at the same time highlights the possible reasons that vaccination rejection may occur in perspectives that are specific to Malaysians. The overall vaccination acceptance of the Malaysian public is high, as most of them either prefer to get vaccinated or already been vaccinated. Most of them have good knowledge on the safety of COVID-19 vaccines and the importance of vaccination. However, the respondents may have differing opinions on their confidence level towards vaccines by specific manufacturers. These findings give an insight into the COVID-19 vaccination acceptance level of the Malaysian public and may possibly aid in effort for vaccination acceptance should there be any form of pandemic as severe as the COVID-19 pandemic occurring in the future. © 2023, Intelktual Pustaka Media Utama. All rights reserved.

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## Crafting a place-based souvenir for sustaining cultural heritage

Duan Z.Y.; Tan S.-K.;  
Choon S.-W.; Zhang M.Y.

DOI:  
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This study aims to investigate the souvenir-person-place bonding for sustaining cultural heritage. Previous studies acknowledge souvenirs could represent a place; however, how people perceive souvenirs as representative of the place still needs to be studied. This study comprehends the traditional craft by identifying the dimensions of place-based craft souvenirs and exploring the connections between souvenirs, craft, and place. A qualitative approach was employed. In-depth interviews, participant and non-participant observations were conducted in Jinan, China, a long-history city with many traditional crafts. Thirty documents were imported into ATLAS.ti software for analysis. The 'place-based craft souvenir', 'evaluation of souvenir', 'place meaning', and 'satisfaction' emerged as the four main themes of 'souvenir-person-place bonding'. These 'souvenir-people-place' bonding motivate individuals' understanding of traditional craft and place, contributing to the sustainability of the traditional craft. © 2023 The Authors

## Critical Factors Impacting the Implementation of Environmental Protection Strategies among Malaysia Industries

Sarwar A.; Azam S.M.F.;  
Khan N.; Raman M.; Seng  
V.O.K.; Siddika A.

DOI: 10.32479/ijep.13279

Environmental protection is a heavily debated topic along with development. Uncontrolled development will sacrifice our environmental and causing issues such as pollution, land slide, flash flood, etc. The objective of this study is to understand drivers of the implementation of environmental protection strategy among industries in Malaysia. Questionnaire was designed and tested with 130 Malaysian organizations. The framework consisted of independent variables such as Client's Requirement, Corporate Social Responsibility, Government Grants and Subsidy versus the dependent variable Environmental Protection Strategy. From the Exploratory Factor Analysis (EFA), it was found out that only client's requirement and corporate social responsibility are relevant towards implementation of environmental protection strategy. One of the very important findings is that government regulation is no longer a mandatory driver for organizations to implement environmental protection strategy. This could be a positive sign that organizations are working the self-regulatory direction than the instrumental enforcement. This is in par with department of environment's latest focus to implement guided self-regulation through environmental mainstreaming tools. Outcome of the study can help the policy makers, regulatory bodies and non-government organizations (NGOs) to shape their direction to form strategies that is most effective. © 2023, Econjournals. All rights reserved.

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## Cyberbullying Detection Based on Emotion

Al-Hashedi M.; Soon L.-K.;  
Goh H.-N.; Lim A.H.L.;  
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DOI:  
10.1109/ACCESS.2023.328  
0556

Due to the detrimental consequences caused by cyberbullying, a great deal of research has been undertaken to propose effective techniques to resolve this reoccurring problem. The research presented in this paper is motivated by the fact that negative emotions can be caused by cyberbullying. This paper proposes cyberbullying detection models that are trained based on contextual, emotions and sentiment features. An Emotion Detection Model (EDM) was constructed using Twitter datasets that have been improved in terms of its annotations. Emotions and sentiment were extracted from cyberbullying datasets using EDM and lexicons based. Two cyberbullying datasets from Wikipedia and Twitter respectively were further improved by comprehensive annotation of emotion and sentiment features. The results show that anger, fear and guilt were the major emotions associated with cyberbullying. Subsequently, the extracted emotions were used as features in addition to contextual and sentiment features to train models for cyberbullying detection. The results demonstrate that using emotion features and sentiment has improved the performance of detecting cyberbullying by 0.5 to 0.6 recall. The proposed models also outperformed the state-of-the-art models by a 0.7 f1-score. The main contribution of this work is two-fold, which includes a comprehensive emotion-annotated dataset for cyberbullying detection, and an empirical proof of emotions as effective features for cyberbullying detection. © 2013 IEEE.

## **Data Driven Models for Contact Tracing Prediction: A Systematic Review of COVID-19**

Muthaiyah S.; Zaw T.O.K.; Anbananthen K.S.M.; Park B.; Kim M.J.

DOI: 10.28991/ESJ-2023-SPER-02

The primary objective of this research is to identify commonly used data-driven decision-making techniques for contact tracing with regards to Covid-19. The virus spread quickly at an alarming level that caused the global health community to rely on multiple methods for tracking the transmission and spread of the disease through systematic contact tracing. Predictive analytics and data-driven decision-making were critical in determining its prevalence and incidence. Articles were accessed from primarily four sources, i.e., Web of Science, Scopus, Emerald, and the Institute of Electrical and Electronics Engineers (IEEE). Retrieved articles were then analyzed in a stepwise manner by applying Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISM) that guided the authors on eligibility for inclusion. PRISM results were then evaluated and summarized for a total of 845 articles, but only 38 of them were selected as eligible. Logistic regression and SIR models ranked first (11.36%) for supervised learning. 90% of the articles indicated supervised learning methods that were useful for prediction. The most common specialty in healthcare specialties was infectious illness (36%). This was followed closely by epidemiology (35%). Tools such as Python and SPSS (Statistical Package for Social Sciences) were also popular, resulting in 25% and 16.67%, respectively. © 2023 by the authors. Licensee ESJ, Italy.

## **Dataset on macroeconomic indicators and fiscal decentralisation indices' variables in Central Java Province, Indonesia**

Lee Y.; Azlan A.M.B.; Lim W.

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10.1016/j.dib.2023.109554

Macroeconomics data was collected through the Central Statistics Agency (BPS) Central Java Province for the thirty-five regencies and municipalities in Central Java Province from 2017 to 2021. The Fundamental index of fiscal decentralisation (FFDI) and Enhanced index of fiscal decentralisation (EFDI) were adapted from [1] and corresponding datasets matched to fiscal data from the Central Java province government. The data sources and indices' calculation methodologies were described in detail. The resulting indices, together with labour participation rate, as well as foreign and domestic investment data were analysed in a panel data analysis model with Gross Regional Domestic Product as the outcome variable. The collected data enables researchers and policy-makers to update observations on the impact of Indonesia's 'Big Bang' fiscal decentralisation on economic growth in a province with above-average growth rate but which had experienced significant challenges arising from the Covid-19 pandemic. This is in light of previous research findings which found that the Indonesian decentralisation has had mixed outcomes due to institutional and fiscal capability limitations within the local governments. The detailed sources and steps to obtain the required data and calculate the FFDI and EFDI enables researchers to apply the indices in providing updated observations on the impact of fiscal decentralisation on various socioeconomic phenomenon. © 2023 The Author(s)

## Deep Reinforcement Learning-Based Dynamic Pricing for Parking Solutions

Poh L.Z.; Connie T.; Ong T.S.; Goh M.K.O.

DOI: 10.3390/a16010032

The growth in the number of automobiles in metropolitan areas has drawn attention to the need for more efficient carpark control in public spaces such as healthcare, retail stores, and office blocks. In this research, dynamic pricing is integrated with real-time parking data to optimise parking utilisation and reduce traffic jams. Dynamic pricing is the practice of changing the price of a product or service in response to market trends. This approach has the potential to manage car traffic in the parking space during peak and off-peak hours. The dynamic pricing method can set the parking fee at a greater price during peak hours and a lower rate during off-peak times. A method called deep reinforcement learning-based dynamic pricing (DRL-DP) is proposed in this paper. Dynamic pricing is separated into episodes and shifted back and forth on an hourly basis. Parking utilisation rates and profits are viewed as incentives for pricing control. The simulation output illustrates that the proposed solution is credible and effective under circumstances where the parking market around the parking area is competitive among each parking provider. © 2023 by the authors.

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## Deep residual learning with attention mechanism for breast cancer classification

Toa C.K.; Elsayed M.; Sim K.S.

DOI: 10.1007/s00500-023-09152-2

Invasive ductal carcinoma (IDC) is a common form of breast cancer that affects women. In traditional medical practice, physicians have to manually test and classify areas which are suspected to be cancerous. However, the literature strongly indicates that the manual segmentation process performed by medical practitioners is neither time efficient nor accurate, as it relies on their subjective judgment. This paper introduces a model called residual attention neural network breast cancer classification (RANN-BCC) to help medical practitioners in the cancer diagnostic process. RANN-BCC utilizes residual neural network (ResNet) as an expert-supportive method to aid medical practitioners in cancer diagnosis. The implementation of RANN-BCC can support the classification of whole slide imaging (WSI) into non-IDC and IDC without prior information about the presence of a cancerous lesion. The classification results demonstrate that the RANN-BCC model has achieved 92.45% accuracy, 0.98 recall, 0.91 precision, and 0.94 F-score which has outperformed other models such as CNN, AlexNet, Residual Neural Network 34 (ResNet34), and Feed-Forward Neural Network. The developed RANN-BCC model aims to help medical experts to classify IDC and non-IDC of breast cancer by learning the feature content of medical images. © 2023, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.



## **Design, Challenges and Developments for 5G Massive MIMO Antenna Systems at Sub 6-GHz Band: A Review**

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DOI:  
10.3390/nano13030520

Massive multiple-input multiple-output (mMIMO) is a wireless access technique that has been studied and investigated in response to the worldwide bandwidth demand in the wireless communication sector (MIMO). Massive MIMO, which brings together antennas at the transmitter and receiver to deliver excellent spectral and energy efficiency with comparatively simple processing, is one of the main enabling technologies for the upcoming generation of networks. To actualize diverse applications of the intelligent sensing system, it is essential for the successful deployment of 5G—and beyond—networks to gain a better understanding of the massive MIMO system and address its underlying problems. The recent huge MIMO systems are highlighted in this paper's thorough analysis of the essential enabling technologies needed for sub-6 GHz 5G networks. This article covers most of the critical issues with mMIMO antenna systems including pilot realized gain, isolation, ECC, efficiency, and bandwidth. In this study, two types of massive 5G MIMO antennas are presented. These types are used depending on the applications at sub-6 GHz bands. The first type of massive MIMO antennas is designed for base station applications, whereas the most recent structures of 5G base station antennas that support massive MIMO are introduced. The second type is constructed for smartphone applications, where several compact antennas designed in literature that can support massive MIMO technology are studied and summarized. As a result, mMIMO antennas are considered as good candidates for 5G systems. © 2023 by the authors.

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## **Detection Method of Partial Discharge on Transformer and Gas-Insulated Switchgear: A Review**

Faizol Z.; Zubir F.; Saman  
N.M.; Ahmad M.H.; Rahim  
M.K.A.; Ayop O.; Jusoh M.;  
Majid H.A.; Yusoff Z.

DOI: 10.3390/app13179605

The detection of partial discharge (PD) activities in high-voltage equipment can be conducted according to several mechanisms of signal detection, including electromagnetic wave signal detection, acoustic signal detection, chemical reactions, electrical signal detection, and optical emission detection. Recently, multiple methods of detection and localization of partial discharge activities, which occurred in power transformers and gas-insulated switchgear (GIS), have been proposed to monitor the health condition of high-voltage equipment, especially when the awareness regarding preventive maintenance has been emphasized at the industrial level and among electrical providers. In aligning the needs of the industrial sector and the improvement of PD-detection methods, this manuscript focuses on reviewing the current practice methods for the detection and localization of PD signals in high-voltage equipment, comparing their efficacy, and summarizing the future direction of research work-related methods of PD detection. The comparative reviews are discussed in terms of the mechanism of PD signal detection, indication parameters, calibration techniques, and the advantages and limitations of each method of PD measurement in detail. © 2023 by the authors.

## **Determinacy of Social Awareness and Cosmopolitanism Towards Female Students' Social Entrepreneurship Intention**

Zulkifle A.M.; Aziz K.A.

DOI:  
10.33168/JSMS.2023.0505

The declining female workforce participation in Malaysia, despite the increase in female graduates, has emerged as a worrisome trend. Recent reports from the Department of Statistics Malaysia (DoSM) indicate that a significant proportion of unemployed graduates in 2022 were women, accounting for 54.2% of the total. This gender disparity in the workforce poses obstacles to female participation in nation-building and impedes economic growth. To tackle this issue, it is essential to explore the determinants of social entrepreneurship intention (SEI) among female students in Malaysian higher learning institutions, considering the potential of entrepreneurship, particularly social entrepreneurship, in addressing unemployment. This study aims to investigate the influence of social awareness and cosmopolitanism on SEI among female students, utilizing the model proposed by Hockerts (2017) and employing regression analysis on a sample of 273 respondents. The results highlight the significant impact of social awareness and cosmopolitanism on SEI among female graduates in Malaysia. Moreover, the findings underscore the substantial roles played by self-efficacy and perceived social support in fostering SEI. To further examine the results, crosstabulation is employed. These findings hold significant implications for policies and programs aimed at encouraging and nurturing female graduates to actively contribute to the nation's development through social entrepreneurship. By addressing the gender gap in the workforce, promoting economic growth, and enhancing social welfare, these initiatives can foster a more inclusive and prosperous society. © 2023, Success Culture Press. All rights reserved.

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## **Determinants of Electric Car Patronage Intention**

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Choong Y.V.; Annamalah  
S.; Ilhavenil N.; Ahmad A.B.

DOI:  
10.14716/ijtech.v14i6.6624

Electric vehicles have been popularized as an environmentally friendly alternative to fuel-based transportation. The Malaysian government and vehicle manufacturers have encouraged the adoption of electric cars, yet Malaysians are seen to be lagging in adopting electric cars. This study is poised to examine the determinants of consumers' purchase intention on electricity, underpinned by The Extended Theory of Planned Behaviour. This quantitative research is set on purposive sampling while PLS-SEM is utilized for data analysis. Findings from 362 respondents reveal that technology readiness, perceived cost, perceived symbol, and knowledge lead to electric car purchase intention. This study provides insights for policymakers and manufacturers towards encouraging purchase intention of electric cars. © (2023), (Faculty of Engineering, Universitas Indonesia). All Rights Reserved.

## **Design of a Simple Real-time Data Acquisition System for Healthcare Monitoring**

Lee L.; Elariny M.K.M.A..

DOI:  
10.1109/I2CACIS57635.2023.10193260

In this project, a real-time data acquisition (DAQ) system for healthcare purposes has been developed. The system is able to display readings for the pulse rate (BPM) and oxygen level (SpO<sub>2</sub>) locally. The system is constructed using a controller, a sensor, and the processing IDE software to display the graphic user interface (GUI). It shows real-time data with a minimal reading error range of 2-3% when compared with market design. This does not affect the final judgement about the medical condition of a user. The system would be useful for home-care patients, namely those who are suffering from heart diseases and people who need a home-care system. The system is cheap and simple to use for patients in home care as well as for those who are not able to go to hospitals. © 2023 IEEE.

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## **Determinants of Social Entrepreneurship Intention: A Longitudinal Study among Youth in Higher Learning Institutions**

Zulkifle A.M.; Aziz K.A.

DOI:  
10.3390/socsci12030124

Social entrepreneurship had been acknowledged as an important solution to highlight various social issues, which many are compounded by the COVID-19 pandemic. Locally, the Malaysian government launched the first Social Entrepreneurship policy framework in 2015 with an allocation of RM 20 million to produce 1000 social enterprises by 2018. However, as of June 2022, the reported number of social enterprises in Malaysia was only 414. This raised questions on the viability of the agenda. Nevertheless, in April 2022, the government expressed continued political will by launching the Malaysian Social Entrepreneurship Action Plan 2030 (SEMy2030). To ensure success, it is important to understand the determinants of social entrepreneurship intention, especially among youth, the leaders of tomorrow. A previous study on another emerging economy observed changes to the social entrepreneurship dynamics due to the COVID-19 pandemic. Thus, the analysis for this study was performed following a longitudinal design on a sample of 486 respondents before and after the COVID-19 pandemic. The findings found Social Awareness, Self-Efficacy, Prior Entrepreneurship Experience, and Cosmopolitanism consistently to be significant determinants of Social Entrepreneurship Intention both pre- and post-pandemic. Meanwhile, Perceived Social Support became significant post-pandemic. Furthermore, gender was found to have a moderating role in several relationships. These insights can lead to the formulation of effective policies and programs to encourage, as well as enable, new generations of social entrepreneurs. © 2023 by the authors.

## **Development and Performance Evaluation of an IoT- Integrated Breath Analyzer**

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DOI:  
10.3390/ijerph20021319

Although alcohol consumption may produce effects that can be beneficial or harmful, alcohol consumption prevails among communities around the globe. Additionally, alcohol consumption patterns may be associated with several factors among communities and individuals. Numerous technologies and methods are implemented to enhance the detection and tracking of alcohol consumption, such as vehicle-integrated and wearable devices. In this paper, we present a cellular-based Internet of Things (IoT) implementation in a breath analyzer to enable data collection from multiple users via a single device. Cellular technology using hypertext transfer protocol (HTTP) was implemented as an IoT gateway. IoT integration enabled the direct retrieval of information from a database relative to the device and direct upload of data from the device onto the database. A manually developed threshold algorithm was implemented to quantify alcohol concentrations within a range from 0 to 200 mcg/100 mL breath alcohol content using electrochemical reactions in a fuel-cell sensor. Two data collections were performed: one was used for the development of the model and was split into two sets for model development and on-machine validation, and another was used as an experimental verification test. An overall accuracy of 98.16% was achieved, and relative standard deviations within the range from 1.41% to 2.69% were achieved, indicating the reliable repeatability of the results. The implication of this paper is that the developed device (an IoT-integrated breath analyzer) may provide practical assistance for healthcare representatives and researchers when conducting studies involving the detection and data collection of alcohol consumption patterns. © 2023 by the authors.

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## **Development of a Data- driven Self-adaptive Upper Limb Virtual Rehabilitation System for Post Stroke Elderly**

Lua Z.; Lim T.Y.

DOI:  
10.1109/VRW58643.2023.0  
0160

The study aims to develop a virtual rehabilitation system to assist upper limb motor training for older post-stroke patients. The system contains data-driven virtual exergames simulating the task-oriented training; receives the rehabilitation prescription and the online data collected from the multi-mode hand controller and the depth camera; assesses online patient's performance which in turn updates the data of virtual exergames to adapt to the patient's training progress. Its innovation is providing precision rehabilitation via gaining the personalized learning experience to improve the adherence to and effectiveness of virtual rehabilitation. © 2023 IEEE.

## Development of An IoT-Enabled Photovoltaic-Battery Renewable Energy System

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Pang W.L.; Dhawale C.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85165715413&partnerID=40&md5=6a5cd3333a7ce6eb7149642fc8ec5ee6>

Solar energy is considered as a prominent source of renewable energy, mainly due to the vast abundance of sunlight and rapid advancements of photovoltaic (PV) technology. The performance, reliability and lifespan of PV systems are severely affected by numerous environmental factors and fault occurrences, which include: (1) extreme swing in the operating temperature; (2) low solar irradiation levels which appear undetected in PV systems, resulting in energy losses and degradation of PV panels; and (3) non-homogenous shading and accumulation of dirt on PV panels, causing thermal imbalance and hotspots on the panels. Therefore, it is important to monitor the operating temperature and homogeneous detection of sunlight on the PV modules to guarantee efficient energy production. In this paper, we present the development and demonstration of a sensor-assisted Internet of Things (IoT)-based photovoltaic-battery renewable energy system. The adoption of the IoT solution for monitoring the real-time variations in environmental factors and system performance is discussed here. For the PV-battery hardware module, solar panels along with rechargeable batteries are constructed to supply the system. Inverters and controllers are used to synchronize the voltage level and transformation of AC power from DC power. In the design of the IoT system, the Arduino Mega microcontroller and ESP32 TTGO board are used along with sensors for recording the temperature, presence of dust/dirt, and voltage and current levels. The working prototype enables real-time data to be captured and sent to the cloud database for data collection, performance analysis, and diagnosis/detection of faults in the proposed system. © 2023, Ismail Saritas. All rights reserved.

## Development of assessment methods for photovoltaic module enhancing techniques using the lifespan parameter

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Sobayel K.; Ibrahim A.; Z.  
Abdullah M.

The photovoltaic module (PV) enhancer is a technology used for improving the PV performance. Recently, much research has been conducted to propose new concepts of PV enhancer such as coolers and reflectors. The PV enhancer performance is assessed by the common existing methods available in the literature, which solely depends on total exergy or energy, volume, area, weight and the manufacturing cost. These assessment methods are useful but cannot assess the PV enhancer's performance when considering the lifespan parameter. Hence, this study is intended to solve the current problem by linking the lifespan parameter into the existing methods by proposing three enhanced assessment methods: yield times lifespan per cost per area, yield times lifespan per cost per volume and yield times lifespan per cost per weight. The PV enhancer with the highest values of these factors will have the optimum performance. The influential parameters and limitations of the enhanced assessment methods are investigated. It is shown that the proposed methods can assess and classify the performance of the PV enhancer with different models when the lifespan is considered in the analysis. These assessment approaches can be applied by manufacturers and designers of PV enhancers. © 2023 The Authors

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94

## Development of IoT-Healthcare Model for Gastric Cancer from Pathological Images

Belgaum M.R.; Momina S.M.; Farhath L.N.; Nikhitha K.; Naga Jyothi K.

DOI: 10.1007/978-3-031-44084-7\_19

The diagnosis of stomach cancer automatically in digital pathology images is a difficult problem. Gastric cancer (GC) detection and pathological study can be greatly aided by precise region-by-region segmentation. On a technical level, this issue is complicated by the fact that malignant zones might be any size or shape and have fuzzy boundaries. The research employs a deep learning-based approach and integrates many bespoke modules to cope with these issues. The channel refinement model is the attentional actor on the chin channel. While implementing the feature channel, the learnt channel weight can be used to eliminate unnecessary features. Calibration is essential to improve classification precision. The results of channel recalibration can be improved with the help of a re-calibration (MSCR) model. The top pooling layer of the network is where the multiscale attributes are sent. The outcomes of channel recalibration may be enhanced by using the channel weights found at various scales as input to the next channel recalibration perfect. Our unique gastric cancer segmentation dataset, carefully glossed down to the pixel level by medical authorities, is used for extensive experimental comparisons. The numerical comparisons with other approaches show that our strategy is superior. © 2023, The Author(s), under exclusive license to Springer Nature Switzerland AG.

## Development of a Detection System for Endangered Mammals in Negros Island, Philippines Using YOLOv5n

Castañeda J.A.J.; De Castro A.L.; Sy M.A.G.; AlDahoul N.; Tan M.J.T.; Karim H.A.

DOI: 10.1007/978-981-19-8406-8\_35

Many species have gone extinct as a result of human neglect and various environmental influences. Monitoring these species has proven to be a challenge due to their small population, remote habitats, and evasiveness, among other reasons. Nonetheless, they can be routinely tracked by using CCTV cameras. This project made use of a transfer learning approach to detect the presence of Malayan civets (*Viverra zibellina*), Visayan leopard cats (*Prionailurus javanensis sumatranus*), Visayan spotted deer (*Rusa alfredi*) and Visayan warty pigs (*Sus cebifrons*) in the forests of Negros Island. We also developed a web application to record camera data and assign timestamps. The setup consisted of a Raspberry Pi 3B+ and a Raspberry Pi camera module powered by a solar power bank. The method used YOLOv5n, a lightweight object detection algorithm, to detect the four species. The trained model yielded 91% mAP, 64% mAP@0.5:0.95, and the following average precisions: 94% (Visayan warty pig), 91% (Malayan civet), 88% (Visayan leopard cat), and 91% (Visayan spotted deer) with 4.5 GFLOPs. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

## Digital Financial Inclusion: Covid-19 Pandemic as a Catalyst for Adoption

Siddika A.; Sarwar A.;  
Bakar R.B.

DOI:  
10.33168/JSMS.2023.0506

In the last decade, the emergence of FinTech has played a crucial role in advancing financial inclusion in developing countries. The Covid-19 Pandemic has further accelerated the adoption of digital platforms due to the restrictions on movement. This study aims to investigate the impact of mobile banking on digital financial inclusion (DFI) during the pandemic in low and lower-middle-income countries. The sample of the study comprised 43 countries, and Principal Component Analysis and the OLS method were utilized to determine the DFI index and the factors affecting DFI. The study discovered that formal financial account ownership had an inverse relationship with DFI. Furthermore, the receipt of public and private wages and payment of utilities through digital platforms had a positive effect on DFI. However, financial literacy had a positive impact on DFI. Therefore, the development of digital payment infrastructure and the promotion of financial literacy is crucial to enhance DFI sustainably in low and lower-middle-income countries. © 2023, Success Culture Press. All rights reserved.

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## Digitalisation and financial inclusion of lower middle-income ASEAN

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S.; Chong L.-L.; Choon S.-  
W.

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47

Recent studies reasoned that digitalising business processes support financial inclusion, resulting in greater economic activities and growth. Digital financial inclusion is argued to be accessible to some privileged and digitally savvy individuals. However, digitalised financial services do not always guarantee financial inclusion. This study examines how the digitalisation of business processes might instil financial inclusion in lower-middle-income ASEAN economies. Based on the Diffusion of Innovation (DOI) theory, the digitalisation of business processes is modelled by fixed high-speed broadband, mobile and cellular subscriptions as a predictor of financial inclusion. The pooled mean group estimation of the autoregressive distributed lag (ARDL) model is employed to determine the effect of digitalisation on the financial inclusion of Cambodia, Indonesia, Laos, Myanmar, the Philippines and Vietnam economies. The key finding is the significance of digitalisation in inducing the financial inclusion of lower-middle-income ASEAN economies. The digitalisation of business processes significantly affects the accessibility of private businesses to domestic credit provided by their banks. © 2023 The Authors

## **Diversification in the tourism sector and economic growth in Australia: a disaggregated analysis**

Solarin S.A.; Lasisi T.T.;  
Hossain M.E.; Bekun F.V.

DOI: 10.1002/jtr.2593

In most countries inclusive of Australia, tourism policies do not only deal with how to diversify tourism markets but also how to diversify tourism activities. Efforts are often made to increase the inflows of tourists from different source markets and to improve arrivals for various tourism activities. However, the existing literature on the economic impact of the diversification of the sector has not dealt with the economic impact of diversification of tourism markets. This study aims to examine the economic impact of diversification of both tourism markets and tourism activities. Using a newly developed tourism diversification index, the focus of the study is on Australia for the period, 1976–2020. Utilizing a dynamic autoregressive lag simulation approach, the results suggest that diversification of tourism markets and activities generated positive economic growth in Australia in line with the notion of tourism-led growth hypothesis. Empirical results outline that a 1% increase in diversification of tourism markets and activities generated increases in the gross domestic product by 0.010% and 0.070%, respectively. One of the implications of the results is that policies to diversify tourism markets and activities will be beneficial to the economy in Australia. © 2023 John Wiley & Sons Ltd.

## **Drowsiness Detection System through Eye and Mouth Analysis**

Lim B.-E.B.; Ng K.-W.; Ng  
S.-L.

DOI: 10.30630/joiv.7.4.2288

Traffic jams are one of the serious issues in many developed countries. After the pandemic, many employees were allowed to travel interstate to work. This contributes to more severe jams, especially in the capital and nearby states. Long-distance driving and congestion can easily make the drivers sleepy and thus lead to traffic accidents. This paper aims to study and analyze facial cues to detect early symptoms of drowsy driving. The proposed method employs a deep learning approach, utilizing ensemble CNNs and Dlib's 68 landmark face detectors to analyze the facial cues. The analyzed symptoms include the frequency of eyes opened or closed and yawning or no yawning. Three individual CNN models and an ensemble CNN structure are built for the classification of the eyes and mouth yawn. The model training and validation accuracy graph and training loss and validation loss graph are plotted to verify that the models have not been overfitted. The ensemble CNN models achieved an approximate accuracy of 97.4% from the eyes and 96.5% from the mouth. It outperforms the other pre-trained models. The proposed system can immediately alert the driver and send text drowsy messages and emails to the third party, ensuring timely intervention to prevent accidents. The proposed method can be integrated into vehicles and transportation systems to ensure driver's safety. It can also be applied to monitor the driving behavior of those who drive long distances. © 2023, Politeknik Negeri Padang. All rights reserved.



## Dual Mode Solar Power for IoT based Smart Farming System

Zulkarnaen I.; Lee C.-L.;  
Chung G.-C.; Wong S.-K.;  
Chan K.-Y.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85165882101&partnerID=40&md5=2fa8e0f72fdd741a5a720e10d1bd7b3a>

The agricultural sector's upheaval is experiencing a momentous surge, bolstered by urbanization and the proliferation of Internet of Things (IoT) technology. The use of modern information and communication technologies has led to increased efficiency in smart farming, resulting in improved productivity and plant quality with minimal human intervention. This paper introduces a smart farming system based on the Internet of Things (IoT) and powered by a dual-mode solar system, fitted with agriculture sensors for data collection from plants, including parameters like soil moisture, temperature, and pH levels. The data is transmitted to the IoT cloud for analysis and display on two IoT platforms, ThingSpeak and mobile Blynk application. A dual-mode solar power integrated in the system, together with an irrigation unit capable of watering the plants automatically or manually, enables seamless switching from solar to wired power in the event of inadequate solar energy. The objective of this initiative is to equip farmers with an affordable smart farming system using renewable energy. This enables them to monitor crop data in real-time and conduct comprehensive analyses to efficiently use water resources. This paper presents a resilient model of the IoT-based smart farming system. © 2023, Ismail Saritas. All rights reserved.

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## Driver fatigue detection using Raspberry-Pi

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42-1149

The subject of fatigue monitoring is becoming more important in transportation and traffic management (including, for instance, the development of systems to detect and prevent driver drowsiness). People who work in offices are also susceptible to exhaustion, but there is currently no widely deployed system that is able to monitor this condition. In most cases, the driver's eyelids will become heavy due to exhaustion after lengthy hours of driving or in the absence of mental concentration. Typically, when the driver's concentration begins to fade, audio alert would be provided to force the drivers awake. In recent times, drowsiness is risky since it can result in an accident. Thus, a solution has been proposed to identify driver drowsiness by comparing several algorithms to find improved accuracy and execution time. Besides, this system will alert the driver with an audible warning in the event of drowsiness is detected. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

## Drivers of green purchasing behaviour: a systematic review and a research agenda

Yusoff N.; Alias M.; Ismail N.

DOI:  
10.12688/f1000research.140765.1

Background: Green purchasing is an important aspect of sustainable consumption, which decreases society's environmental effect. Although numerous research has been conducted to investigate the determinants of green buying behaviour, there has been a lack of effort in comprehensively analysing these findings. The purpose of this study is to examine the available literature on the factors that influence green purchasing behaviour. Methods: The review focused on empirical research published in peer-reviewed English-language publications between 2017 and 2021 in Web of Science and Scopus. The research took place from May to June 2021. Mixed Methods Appraisal Tool (MMAT) is used to assess the risk of bias in systematic literature reviews. Results: 41 articles were included, with significant focus on the retailing sector. Most of these studies were centred in Asian countries, primarily China and India. The Theory of Planned Behaviour was the most prominent, appearing 15 times, followed by the Theory of Reasoned Action (seven times). Analysis identified five main themes and 15 sub-themes related to green purchase behaviour drivers. These themes were categorized by occurrence: People (34 papers), marketing (13), knowledge (12), environment (12), and influence (nine). The dominant driver was people (34 studies), encompassing sub-themes including motivation (three), perception (eight), behavioural (13), and psychographic characteristics (10). Conclusions: This study has given an overview of the present status of green purchasing behaviour, which serves as a foundation for future studies and guidance for policymakers and practitioners. However, it does not include unpublished materials and non-English papers. Secondly, it focuses on articles from two databases within the last five years which doesn't encompass all article types, prompting the need for future exploration. Thirdly, extending the review's time frame could unveil more pronounced GPB patterns. Lastly, although all eligible papers were assessed based on criteria, the chance of overlooking some papers is acknowledged. Copyright: © 2023 Yusoff N et al.

## E learning Participation Intention Among Tertiary Students During Covid-19 Pandemic

Chelvarayan A.; Fern Y.S.; Kiat J.C.S.

DOI:  
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The COVID-19 pandemic led educational establishments to close, severely disrupting entire educational system. This study intends to identify the crucial elements that impact people's decision to engage in e-learning during COVID-19. 200 tertiary students were surveyed in a cross-sectional fashion to get the data, which was then analysed using SPSS. The conclusions demonstrated that COVID-19-related features, including perceived challenges and COVID-19 awareness, had an impression on undergraduates' intentions both directly and indirectly through the perceived usefulness and usability of e-learning platforms. Additionally, several findings demonstrated that students' intentions to join in e-learning throughout COVID-19 are strongly influenced via the educational institution's readiness. © 2023 IEEE.

## Dynamic model and integrated optimal controller of hybrid arms robot for laser contour machining

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0

The hybrid arms robot (HAR) is a new modified robot which consists of a rigid link (RL) and a flexible link (FL), and it carries a laser head at the end-effector for laser contour machining (CM). The HAR is inspired from a rigid-flexible links manipulator (RFLM) and the aim is to bring the advantages of flexible link manipulators (FLMs) to industrial robots. The HAR gains the advantages of lightweight robots and FLMs such as fast response, less power consumption due to using small actuators, low cost, and safe to surrounding operators. However, the HAR has the drawback of a tip vibration caused by the flexibility of the second FL and leads to a position error at the end-effector position. Furthermore, the HAR has more parameters to be incorporated in a dynamic model such as the tip vibration, the laser head weight, and a force generated by the assist gas pressure. This research aims to obtain the dynamic model of the HAR using the finite element method (FEM) in conjunction with the Lagrangian equation and to propose an integrated optimal controller (IOC) which is an integration of a linear quadratic regulator (LQR) and a fuzzy logic controller (FLC). The derived dynamic model of the HAR is efficient due to the close match response with the SimMechanics model response of the HAR. The proposed IOC is tested for point-to-point (PTP) position control of the HAR and demonstrates improved response and better capability for the tip vibration suppression. The proposed IOC also reveals enhanced triangular CM trajectory, rhombic CM trajectory, and circular CM trajectory of the HAR laser head compared to the LQR performance in a proper cutting speed to ensure the machining quality. © The Author(s) 2022.

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## Electrochemical stability and corrosion mechanism of fluorine-doped tin oxide film under cathodic polarization in near neutral electrolyte

Sanz-Navarro C.F.; Lee S.F.; Yap S.S.; Nee C.H.;  
Yap S.L.

DOI:  
10.1016/j.tsf.2023.139697

Commercial fluorine-doped tin oxide (FTO) coated glass slides were subjected to different cathodic potentials for 15 min in 0.2 M Na<sub>2</sub>SO<sub>4</sub> of pH 6.42 to study their electrochemical stability. Results showed that FTO could maintain its electrochemical stability until -1200 mV. However, when it was cathodically polarized from -1600 mV to more negative potentials, band structure positions started to shift upwards, the electrolyte became more acidic and a porous structure appeared on the FTO surface. At -2000 mV, a layer of metallic Sn was seen deposited on the FTO surface, verified by X-ray diffraction and scanning electron microscopy – energy dispersive X-ray spectroscopy. During the cathodic corrosion in near neutral electrolyte, the reduction of SnO<sub>2</sub> to Sn involves water oxidation as well as hydrogen evolution reaction. © 2023 The Author(s).

## Effects of the Pandemic on the Adoption of E-Wallets Among Young Adults in Malaysia

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T.K.

DOI:  
10.22059/JITM.2022.33997  
1.3036

The rapid growth and advancement of electronic devices and technologies in the FinTech industry empower new innovative products and services. The covid-19 pandemic could have a devastating effect on Malaysia's economy, but it has offered additional opportunities for the E-wallet segment of the Fintech business to thrive. The E-wallet segment of FinTech is one of the latest innovations that is currently growing as there is a need for contactless payments during the pandemic situation. The main objective of the study is to examine the factors affecting e-wallet adoption among young adults in Malaysia. A sample of 200 responses was analyzed using Smart PLS 3.0. The findings revealed that the factors of "performance expectancy", "effort expectancy", "compatibility", and "social influence" have a positive and significant impact during the pandemic; however, the factor of "facilitating conditions" has no significant impact on the adoption of the E-wallets. The study substantiates the key and important variables of adoption in order to develop and evolve E-wallet providers' existing services. Particularly, due to the increasing importance of e-commerce, E-wallet service providers are urged to focus on the system's interoperability, which encourages individuals or customers to use the strategy. They should include unique features that allow customers to accept the service, trust its benefits and feel comfortable using the technology. The study is useful to the E-wallet providers to improve the existing services. The findings also guide the companies offering E-wallets to enhance the usage and adoption of their services. © 2023 University of Tehran. All rights reserved.

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## Literacy, profile, and determinants of Bitcoin, Ethereum, and Litecoin: Survey results

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1414

This study attempts to assess individuals' Bitcoin, Ethereum and Litecoin literacy, and then identifies different profiles based on the literacy levels of these cryptocurrencies, and further investigates whether financial literacy explains Bitcoin, Ethereum and Litecoin literacy. Using a sample from higher learning institutions in Malaysia, the results indicate that individuals exhibit higher knowledge on Bitcoin compared to Ethereum and Litecoin. Cluster analysis revealed two clusters, where the high-cryptocurrency-literacy cluster (high in Bitcoin, Ethereum, and Litecoin literacy) has a distinct demographic profile and higher financial literacy than the low-cryptocurrency-literacy cluster (low in Bitcoin, Ethereum, and Litecoin literacy). Financial literacy is shown to explain Bitcoin and Ethereum literacy, but not Litecoin literacy. © 2023 Taylor & Francis Group, LLC.

## Energy-Efficient and Variability-Resilient 11T SRAM Design Using Data-Aware Read–Write Assist (DARWA) Technique for Low-Power Applications

Thirugnanam S.; Soong L.W.; Prabhu C.M.; Singh A.K.

DOI: 10.3390/s23115095

The need for power-efficient devices, such as smart sensor nodes, mobile devices, and portable digital gadgets, is markedly increasing and these devices are becoming commonly used in daily life. These devices continue to demand an energy-efficient cache memory designed on Static Random-Access Memory (SRAM) with enhanced speed, performance, and stability to perform on-chip data processing and faster computations. This paper presents an energy-efficient and variability-resilient 11T (E2VR11T) SRAM cell, which is designed with a novel Data-Aware Read–Write Assist (DARWA) technique. The E2VR11T cell comprises 11 transistors and operates with single-ended read and dynamic differential write circuits. The simulated results in a 45 nm CMOS technology exhibit 71.63% and 58.77% lower read energy than ST9T and LP10T and lower write energies of 28.25% and 51.79% against S8T and LP10T cells, respectively. The leakage power is reduced by 56.32% and 40.90% compared to ST9T and LP10T cells. The read static noise margin (RSNM) is improved by 1.94x and 0.18x, while the write noise margin (WNM) is improved by 19.57% and 8.70% against C6T and S8T cells. The variability investigation using the Monte Carlo simulation on 5000 samples highly validates the robustness and variability resilience of the proposed cell. The improved overall performance of the proposed E2VR11T cell makes it suitable for low-power applications. © 2023 by the authors.

## ViTMed: Vision Transformer for Medical Image Analysis

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DOI:  
10.1109/ICoICT58202.2023.10262548

The COVID-19 global health crisis has presented daunting challenges to medical professionals, making accurate and efficient diagnoses more important than ever. In view of this, this paper proposes a Vision Transformer model, ViTMed, with an attention mechanism to classify the CT scan images for more effective diagnosis of COVID-19. Given the input CT scan images, it is represented as sequences of tokens and a transformer is utilized to capture global and local dependencies between features by utilizing self-attention mechanism. The core element in ViTMed is the transformer encoder with multi-headed attention (MHA) mechanism and feed-forward network. This enables model to learn hierarchical representation of image and make more informed predictions. The proposed ViTMed achieves promising performance with fewer parameters and computations than conventional Convolutional Neural Networks. From the experimental results, the proposed ViTMed outperforms state-of-the-art approaches for all three public benchmark datasets of COVID-19, 98.38%, 90.48%, and 99.17% accuracy for SARS-CoV-2-CT, COVID-CT, and iCTCF datasets, respectively. The number of samples collected for each dataset are 2482, 746, 19685. The datasets consist of two to three classes, which are Covid, Non-Covid and Non-informative cases. © 2023 IEEE.

## **Enabling green shared vision: linking environmental strategic focus and environmental performance through ISO 14001 and technological capabilities**

Ong T.S.; Lee A.S.; Latif B.; Sroufe R.; Sharif A.; Heng Teh B.

DOI: 10.1007/s11356-022-24280-2

Consistent with the worldwide call to combat environmental degradation concerns and advance sustainable development, there is increasing pressure on organizations to ensure organizational strategies include green initiatives. In this regard, environmental strategic focus is a relevant concept for scholars and business leaders. Underpinned by dynamic capability and stakeholder theory, the present study hypothesizes that ESF derives environmental performance, coordinated by mediating role of green shared vision that strategic environmental planning and decision making. Additionally, the current study employed ISO 14001 and technological capability as moderators between ESF and the green shared vision link. Methodologically, the data for this study was collected from 162 senior managerial officials working in EMS 14,001-accredited manufacturing firms in Malaysia. The data were analyzed with the AMOS 23 software to perform covariance-based structural equation modeling (CB-SEM), and then hierarchical regression analysis and moderated-mediation analysis were applied with SPSS 25. The findings confirmed that ESF is positively linked to environmental performance. The results validate that green shared vision acts as a positive mediator between ESF and environmental performance, in which the creation and sharing of knowledge embedded in a green shared vision serve as enablers to create higher environmental performance. The current study also validates a significant moderating role of ISO 14001 and technological capability between ESF and green shared vision. The study confirms how environmental strategies are integrated into environmental management processes that can serve as a source of dynamic capabilities. © 2022, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.

## **The Nexus Between Corporate Social Responsibility Performance and Audit Fee: The Malaysian Evidence**

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This study examines the relationship between CSR (Corporate Social Responsibility) performance and audit fee based on Malaysian market. Through on 51 Malaysian public listed firms over the period of 2012 to 2020, the result shows that CSR performance and audit fee has positive relationship. The evidence may indicate either 1) firms' management utilizes CSR to extract personal benefits or as a tool to 'greenwash' corporate image; or 2) ethical firms demand credible financial reports and are therefore willing to incur higher audit fees for quality audit. The outcome of this study is expected to give insights to policy makers about the need to revise the sustainability reporting framework in Malaysia. © 2023 IEEE.

## **Enhanced Dynamic Energy Absorption in Carbon/Aramid Composite Tubes with Axially Graded Impedance**

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DOI:  
10.18517/ijaseit.13.5.19050

This study investigated the effects of carbon-aramid arrangement and strain rate on crush tube energy absorption. Round composite tubes, each consisting of three layers of fabric, were made using four different carbon-aramid hybridization schemes. Hand lay-up and compression bladder molding were used in the fabrication process. In two hybridization schemes, carbon-aramid fabrics were arranged to evaluate the effect of axially graded impedance relative to the tube impact end. Static crush and low-velocity impact (LVI) tests were conducted, and the force-displacement responses, energy absorption characteristics, and failure modes were compared. Test results revealed that energy absorption was 20% to 60% higher in the low-velocity impact test than in static crush, regardless of the hybridization schemes. In both tests, material arrangement played a surprisingly important role that was comparable to the tube carbon content in energy absorption. Maximum specific energy absorption of 26.21 kJ/kg was obtained in the hybridization scheme with the low impedance at the initiator end, with increasing impedance towards the impact end. This amount of specific energy absorption is almost equivalent to the other hybridization scheme that has twice the carbon fiber content. This scheme facilitated initial damage modes that favored progressive folding in the rest of the tube. This study presents the idea of enhancing the crashworthiness of crash boxes using axially graded impedance material arrangement. It is recommended that the idea be subjected to more testing for verification and potential commercialization. © IJASEIT is licensed under a Creative Commons Attribution-Share Alike 4.0 International License.

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## **The Role of Governments in Driving Industry 4.0 Adoption in Emerging Countries: Mediating Effect of Organizational Structure**

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DOI: 10.4018/JGIM.323439

Industry 4.0 contributes to the virtualization of production system and enhances capabilities. However, the adoption process poses substantial challenges for SMEs in emerging markets due to institutional voids, resources, and public supports. This study explores the role of government in adopting Industry 4.0 by the SMEs and how organizational structure influences the process. It employed a quantitative approach and surveyed 225 managers. Industry 4.0 adoption is significantly influenced by government policy and subsidies. Government policy and subsidy transform organizational structure to be more transparent and flexible, streamlining them in adopting Industry 4.0. The organizational structure substantially mediates the relationships between government policy, subsidy, and Industry 4.0 adoption. This study implies that governments are vital in helping SMEs to adopt Industry 4.0 in emerging markets. Thus, governments should make policies that support technology adoption by offering sufficient funding/subsidies to boost innovation and technological transformation. © 2023 IGI Global. All rights reserved.

## Understanding Islamic-oriented non-governmental organisation and how they are contrasted with NGO in outdoing Malaysia LGBT phenomenon

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10.4102/hts.v79i1.8616

The term non-governmental organisations (NGOs) has been well-known for the development of human rights, charity works and organisational developments. On the other hand, some NGOs also have their specialised roles to help the community such as in conflict resolution, cultural preservation, policy analysis and information provision. Apart from that, there are many categories of NGOs: Islamic-oriented non-governmental organisation (IONGOs), faith-based organisation (FBO), humanitarian NGOs (HNGOs) and government organised NGOs (GONGOs). However, in this research, the researchers focus on how IONGOs compare with NGOs in assisting the lesbian, gay, bisexual, and transgender (LGBT) community based on four hijrah NGOs: Persatuan Islah Movement, Persatuan Insaf Pahang, Hijrah Republique Network and Usrah Iqrah. These four NGOs were chosen because of their roles in assisting the LGBT community. In this research, the researchers adapt the qualitative research by using a case study method; phenomenological approaches and a document analysis have also been applied as well. The result shows that these four IONGOs are different from the NGOs based on the seven typologies applied: intersection, distinct, substantive, subset, co-existing, atomistic grouping and constitutive. The implications of this article highlight the fact that IONGOs are different from the LGBT NGOs in Malaysia as they focus more on spirituality and an Islamic pathway. Hence, future research should include focus group interviews with all the members in NGOs that assist the LGBT hijrah in the community. © 2023. The Author(s).

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## Sentiment Analysis on COVID-19 Vaccine Tweets using Machine Learning and Deep Learning Algorithms

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0504

One of the main functions of NLP (Natural Language Processing) is to analyze a sentiment or opinion of the text considered. In this research the objective is to analyze the sentiment in the form of tweets towards the Covid-19 vaccination. In this study, the collected tweets are in the form of a dataset from Kaggle that have been categorized into positive and negative depending on the polarity of the sentiment in that tweet, to visualize the overall situation. The reviews are translated into vector representations using various techniques, including Bag-Of-Words and TF-IDF to ensure the best result. Machine learning algorithms like Logistic Regression, Naïve Bayes, Support Vector Machine (SVM) and others, and Deep Learning algorithms like LSTM and Bert were used to train the predictive models. The performance metrics used to test the performance of the models show that Support Vector Machine (SVM) achieved the highest accuracy of 88.7989% among the machine learning models. Compared to the related research papers the highest accuracy obtained using LSTM is 90.59 % and our model has predicted with the highest accuracy of 90.42% using BERT techniques. © 2023, International Journal of Advanced Computer Science and Applications. All Rights Reserved.



## Enhancing the Efficiency of Diabetes Prediction through Training and Classification using PCA and LR Model

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10.33166/AETiC.2023.03.00  
4

In this paper, we introduce a new approach for predicting the risk of diabetes using a combination of Principal Component Analysis (PCA) and Logistic Regression (LR). Our method offers a unique solution that could lead to more accurate and efficient predictions of diabetes risk. To develop an effective model for predicting diabetes, it is important to consider various clinical and demographic factors contributing to the disease's development. This approach typically involves training the model on a large dataset that includes these factors. By doing so, we can better understand how different characteristics can impact the development of diabetes and create more accurate predictions for individuals at risk. The PCA method is employed to reduce the dataset's dimensions and augment the model's computational efficacy. The LR model then classifies patients into diabetic or non-diabetic groups. Accuracy, precision, recall, the F1-score, and the area under the ROC curve (AUC) are only a few of the indicators used to evaluate the performance of the proposed model. Pima Indian Diabetes Data (PIDD) is used to evaluate the model, and the results demonstrate a significant improvement over the state-of-the-art methods. The proposed model presents an efficient and effective method for predicting diabetes risk that may have significant implications for improving healthcare outcomes and reducing healthcare costs. The proposed PCA-LR model outperforms other algorithms, such as SVM and RF, especially in terms of accuracy, while optimizing computational complexity. This approach can potentially provide a practical and efficient solution for large-scale diabetes screening programs. © 2023 by the author(s).

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## Estimation of battery internal resistance using built-in self-scaling method

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DOI:  
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This paper proposes the use of the built-in self-scaling (BS) method for the effective estimation of the internal resistance of lithium-ion batteries. The internal resistance is a measure of the battery's state-of-health and an important parameter to monitor, especially in safety-critical applications such as hybrid electric vehicle applications. The BS technique works by identifying the system's impulse response and then computing the resistance from this response. This approach makes use of a prior DC gain which capitalizes on the fact that the state-of-health changes slowly with time. The BS method can be utilized on the fly in real time, is passive, and has high accuracy which is invariant with respect to the battery dynamics. Simulation results show that the BS method reduces the mean square error by factors of 32, 69 and 20 compared with the series resistance, the least squares and data pieces, and the kernel-based techniques, respectively, in the absence of hysteresis. The corresponding values in the presence of hysteresis are 42, 62 and 21, respectively. Experimental results using a lithium nickel manganese cobalt oxide battery and a dynamic current profile based on the Federal Urban Driving Schedule further confirm the superiority of the proposed BS approach. © 2022 Elsevier Ltd.

## Enhancing User Experience: Immersive Virtual Reality Property Showhouse

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Y.-F.; Tan W.-H.

DOI:  
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10295142

This paper presents the design and development of an immersive Virtual Reality (VR) Property Showhouse application and an initial study that explores the use of VR technology in enhancing user experience for viewing property showhouse. Despite virtual tour facilitating the visualization and marketing of actual properties via digital platforms, the persisting inadequacy of conventional approaches in delivering an authentic and immersive portrayal of property show units remains a challenge. In pursuit of addressing this challenge, the immersive VR Property Showhouse was developed to empower users to delve into Digital Home virtual tour in a more experiential and engaging manner. By capitalizing on immersive VR technology, users can traverse properties in a highly captivating and verisimilar fashion, cultivating a sense of presence and simulating the sensation of physically inhabiting the space. The technical details which include the design considerations for creating the immersive user experience for the app are presented. This paper additionally examines closely the existing literature on VR's application in real estate, showcasing the prospective advantages of this technological marvel. To gauge the efficacy of the VR application a usability evaluation was conducted using the System Usability Scale (SUS) with 30 participants. The outcome of the user evaluation manifested a positive user experience, with an average SUS score of 85, signifying exceptional usability. These results provide important knowledge for those looking to integrate immersive VR into the real estate industry and contribute to understanding how VR can be designed and used effectively to enhance user engagement and understanding of properties, ultimately influencing their decision-making process. Given the soaring popularity of virtual tours, it is important for real estate practitioners and VR developers to continuously seek innovative approaches to refine the features and immersion quality of these tours, ultimately delivering an unparalleled experience for potential buyers. © 2023 IEEE.

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## Indonesian village tourism: a bibliometric review

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Nurhazizah E.; Rubiyanti  
N.; Ahmad M.; bin Abu  
Sujak A.F.; Zahid A.; Razali  
R.R.R.; Mangsor M.;  
Pradana M.; Tantra T.;  
Silvianita A.

In Indonesia, tourism in rural or village settings is growing as a kind of tourist development that supports regional culture and history. These communities support the economic development of rural regions while providing tourists with a comprehensive rural experience. Low pay and unpleasant working conditions are obstacles, though. This study measures the local communities' preparedness for the creation of a tourism town and rates its efficacy. The study investigates the trends and clusters in village tourism research using bibliometric analysis. The results provide stakeholders in Indonesia information to support national growth and alleviate regional inequities. © 2023 SPIE.

DOI: 10.1117/12.3011445

## **Entrepreneurial Orientation and Open Innovation Promote the Performance of Services SMEs: The Mediating Role of Cost Leadership**

Chelliah M.K.; Aravindan K.L.; Muthaiyah S.

DOI: 10.3390/admsci13010001

In the 21st century, small and medium service firms face difficulty sustaining their performance. Additionally, the literature on entrepreneurial orientation (EO) in SMEs is scarce. Moreover, the role of cost leadership strategy as a mediator lacks researchers' attention. Therefore, this research aims to examine the relationship between EO and SMEs performance with the mediating role of cost leadership strategy. Based on the contingency theory, a theoretical model has been drawn. A survey approach with a questionnaire technique has been adapted to achieve the study objectives. The data were collected from 283 service SMEs in three states of Malaysia. The Partial Least Square Structural Equation Modelling (PLS-SEM) technique was employed to analyze the empirical data. The study findings highlight that risk-taking and open innovation have no direct relationship with SMEs' performance. However, through the mediation role of cost leadership, risk-taking and open innovation have a significant association with performance. Furthermore, the findings indicate that proactiveness, competitive aggressiveness, and autonomy have a positive and direct relationship with performance, whereas in the presence of cost leadership, competitive aggressiveness has a partial mediating effect. The empirical findings are helpful to policymakers, researchers, and practitioners. © 2022 by the authors.

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## **EnViTSA: Ensemble of Vision Transformer with SpecAugment for Acoustic Event Classification**

Lim K.M.; Lee C.P.; Lee Z.Y.; Alqahtani A.

DOI: 10.3390/s23229084

Recent successes in deep learning have inspired researchers to apply deep neural networks to Acoustic Event Classification (AEC). While deep learning methods can train effective AEC models, they are susceptible to overfitting due to the models' high complexity. In this paper, we introduce EnViTSA, an innovative approach that tackles key challenges in AEC. EnViTSA combines an ensemble of Vision Transformers with SpecAugment, a novel data augmentation technique, to significantly enhance AEC performance. Raw acoustic signals are transformed into Log Mel-spectrograms using Short-Time Fourier Transform, resulting in a fixed-size spectrogram representation. To address data scarcity and overfitting issues, we employ SpecAugment to generate additional training samples through time masking and frequency masking. The core of EnViTSA resides in its ensemble of pre-trained Vision Transformers, harnessing the unique strengths of the Vision Transformer architecture. This ensemble approach not only reduces inductive biases but also effectively mitigates overfitting. In this study, we evaluate the EnViTSA method on three benchmark datasets: ESC-10, ESC-50, and UrbanSound8K. The experimental results underscore the efficacy of our approach, achieving impressive accuracy scores of 93.50%, 85.85%, and 83.20% on ESC-10, ESC-50, and UrbanSound8K, respectively. EnViTSA represents a substantial advancement in AEC, demonstrating the potential of Vision Transformers and SpecAugment in the acoustic domain. © 2023 by the authors.

## **Equity ownership concentration's impact on corporate internal control: the moderating effects of female directors and board compensation**

Ong T.S.; Zhou J.; Teh B.H.; Di Vaio A.

DOI: 10.1007/s10668-023-03795-9

By promoting diversity in equity ownership concentration, strengthening female representation on boards, aligning pay with sustainability goals, and implementing strong internal control processes, companies can integrate sustainable practices into their operations, improve their sustainability performance, and attain long-term environmental and societal health. Therefore, this study examined the relationship between ownership concentration and internal control through the sustainability lens, specifically focusing on the moderating effects of female directors and board compensation. Data from a sample of 1609 A-share listed businesses in Shanghai and Shenzhen between 2012 and 2021 were analyzed. The findings from the fixed effects model revealed the following: ownership concentration negatively affects internal control; the number of female directors positively influences internal control; female directors actively moderate the relationship between ownership concentration and internal control; and board compensation enhances the effectiveness of internal control. These insights provide valuable data for businesses to enhance their internal control systems, appoint key personnel, and advance their sustainability goals. This study suggests that linking board characteristics to corporate internal control can lead to strengthened sustainable objectives. It also incentivizes directors to prioritize and integrate sustainability concerns in their decision-making. Furthermore, by ensuring that compensation reflects sustainability performance, firms can cultivate a sustainability-based culture and drive effective internal controls that support sustainable practices, ultimately contributing to long-term environmental and social well-being. © 2023, The Author(s).

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## **Exploring the Impact of IoT Adoption on Elderly Non-Communicable Disease Patients: Attitudes, Subjective Norms, and Perceived Behavioral Control in Malaysia**

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Jayashree S.

DOI:  
10.1109/SmartTechCon575  
26.2023.10391307

This research examines the impact of IoT adoption on elderly non-communicable disease (NCD) patients in Malaysia, focusing on their attitudes, subjective norms, perceived behavioral control, perceived innovativeness, and intentions towards IoT technologies. Through primary data collection using a quantitative approach, survey questionnaires were administered to a representative sample of elderly NCD patients. SmartPLS will examine the links between the key variables and the behavioural intention to use IoT among elderly NCD patients. For examining IoT adoption intention, this study developed a framework based on the theory of planned behaviour (TPB). This research will help older adults and healthcare practitioners understand the significance of IoT in healthcare. The findings of this study are expected to produce meaningful insights that could raise awareness and educating patients about the benefits of IoT adoption, involving social networks for support and encouragement, enhancing self-efficacy and technological skills, integrating IoT devices into existing healthcare systems, and implementing supportive policies. © 2023 IEEE.

## ESS-IoT: The Smart Waste Management System for General Household

Wong S.Y.; Han H.; Cheng K.M.; Koo A.C.; Yussof S..

DOI: 10.47836/pjst.31.1.19

With the urban population's growth, unethical and unmanaged waste disposal may negatively impact the environment. In many cities, a massive flow of people in municipal buildings or offices has generated vast amounts of waste daily, which correlates to the enormous expenses of waste management. The critical issue for better waste management is waste collection and sorting. In this study, the Electronic Smart Sorting-Internet of Things (ESS-IoT) is proposed to assist people in better waste management. The ESS-IoT system uses Raspberry Pi 4b as the microcontroller with three modules, and it is designed with two main functions: waste collection and waste classification. The two main functions have been deployed separately in the literature, while this study has combined both functions to achieve a more comprehensive smart bin waste disposal solution. Waste collection is triggered by the overflow alarm mechanism that employs ultrasonic and tracker sensors. On the other hand, the waste classification is implemented using two classification algorithms: Random Forest (RF) prediction model and Convolutional Neural Network (CNN) prediction model. An experiment is conducted to evaluate the accuracy of the two classification algorithms in classifying various types of waste. The waste materials under investigation can be classified into four categories: kitchen waste, recyclables, hazardous waste, and other waste. The results show that CNN is the better classification algorithm between the two. Future work proposes the research extension by introducing an incentive mechanism to motivate the household communities using a cloud-based competition platform incorporated with the ESS-IoT system. © Universiti Putra Malaysia Press.

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## Financial impact of cost of capital on tourism-based SMEs in COVID-19: implications for tourism disruption mitigation

Song Y.; Yan J.; Yu Z.; Li T.; Yang Y..

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Opportunities for funding Tourism SMEs are emerging globally due to the expansion of tourism sector. However, it is still being determined how these financial arrangements will be controlled at more significant sizes equitably. In the contemporary period, E7 economy is deficient in producing the financial resources to ensure the availability of funds for the acquisition of funds for tourism-based SMEs. However, this research tested the empirical position of cost of debt in E-7 economies during COVID-19 crises. Study findings have shown significant outcomes between the constructs. The variation of conditions, structural uncertainty, transection systems, and variation in support by the financial institution for tourism-based SMEs are the main reasons that lessen borrowing and lending system of funds, from banks to SMEs. However, theorists must revisit the transaction system of debt financing for SMEs. Policymakers are suggested to develop viable and SME system-friendly policies to finance through debt capital from the banks in the time of structural imposed crises, like COVID-19. © 2022, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.

## **Ethical Leadership, Green HRM Practices and Environmental Performance of Manufacturing SMEs at Selangor, Malaysia: Moderating Role of Green Technology Adoption**

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DOI: 10.1007/978-3-031-  
42511-0\_6

The relevance of the environmental agenda for the business has increased tremendously in recent years globally. The ecological performance of small and medium-sized enterprises (SMEs) in Malaysia deserves more academic scrutiny since it is expected that this sector influence on the environment is significantly higher than the large corporations. To tackle the negative ecological influence of SMEs, ethical leadership from top management level, green HRM practices, and green technology adoption can play crucial role. Thus, this paper examined the association between ethical leadership (EL) and green human resource management practices (GHRMP) on environmental performance (EP) of manufacturing SMEs at Selangor, Malaysia along with moderating influence of green technology adoption (GTA). Quantitative methodology, non-probability convenience sampling method was applied and responses were collected from 140 managers and from 140 manufacturing firms situated at Selangor, Malaysia. Data analysis through smart PLS software reveals that EL, GHRMP have positive significant relationship on EP. EL and GHRMP both significantly moderate with EP in the presence of GTA. The research findings will inspire the industry player, policy makers, and different stakeholders to develop policies and engage in green practices. With the inclusion of diverse constructs, the model offers novel contribution on both academia and industry practice. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2023.

## **Evaluating the Performance of Proposed Switched Beam Antenna Systems in Dynamic V2V Communication Networks**

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Mahmud A.; Gwo-Chin C.;  
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DOI: 10.3390/s23156782

This paper develops a novel approach for reliable vehicle-to-vehicle (V2V) communication in various environments. A switched beam antenna is deployed at the transmitting and receiving points, with a beam management system that concentrates the power in each beam using a low-computation algorithm and a potential mathematical model. The algorithm is designed to be flexible for various environments faced by vehicles. Additionally, an anti-failure system is proposed in case the intelligent transportation system (ITS) system fails to retrieve real-time Packet Delivery Ratio (PDR) values related to traffic density. Performance metrics include the time to collision in seconds, the bit error rate (BER), the packet error rate (PER), the average throughput (Mbps), the beam selection probability, and computational complexity factors. The proposed system is compared with traditional systems. Extensive experiments, simulations, and comparisons show that the proposed approach is excellent and reliable for vehicular systems. The proposed study demonstrates an average throughput of 1.7 Mbps, surpassing conventional methods' typical throughput of 1.35 Mbps. Moreover, the bit error rate (BER) of the proposed study is reduced by a factor of 0.1. Additionally, the proposed framework achieves a beam power efficiency of touching to 100% at computational factor of 34. These metrics indicate that the proposed method is both efficient and sufficiently robust. © 2023 by the authors.

## **Evaluation Of Substrate Materials And Mass Structure On Piezoelectric Cantilever Based Energy Harvester**

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Chan Y.K.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85184010044&partnerID=40&md5=f0236dafab2f45f28d346f6f2716ff78>

As the world progresses towards sustainable energy, piezoelectric energy harvesting system secures an escalating interest to shape up the idea of energy harvesting for application and devices that require small fraction of power. The current shortcoming of piezoelectricity is its narrow operating frequency bandwidth. This leads to it being only effective in limited circumstances. The purpose of this research is to identify the fundamental factors contributing to achieving a more stable and wide operating frequency bandwidth without applying any external medium to the system. COMSOL Multiphysics was applied to simulate the cantilever beam by changing the configuration of the system, such as size, shape, and the material of the tip mass, within a range of 0-300 Hz. From the simulations results, Tungsten outperforms all the other materials in every tested configuration and aluminium produces the least magnitude of voltage and power. The rest of the materials show sufficient outputs, while some of the materials display stable value at their peak for a few consequent frequencies, including aluminium. The results would help explore conditions that may lead to the enhancement of the output for further use in various devices and applications. © 2023 Taylor's University. All rights reserved.

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## **Exploring earnings management: Institutional ownership and audit size in Malaysia's sustainability pathway**

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DOI:  
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This study aims to investigate the relationships between discretionary accrual earnings management (DEM), real earnings management (REM), institutional ownership, and audit quality in Malaysian firms. The study's findings are expected to offer insights into how these factors may influence Malaysia's progress towards the Sustainable Development Goals. We examine the relationship between DEM and REM to identify the potential simultaneous use of earnings management strategies. Additionally, we explore the impact of institutional ownership and audit firm size on a company's earnings management practices. Using data from the Kuala Lumpur Stock Exchange (KLSE) spanning 2016-2018 we conducted statistical analyses, including ANOVA, t-tests, and multiple regression. There were notable correlations between DEM and REM, suggesting that these earnings management techniques are being used concurrently. Notably, institutional ownership and audit firm size played substantial roles in firms' earnings management practices. Companies with higher institutional ownership and larger audit firms tended to exhibit lower levels of DEM and REM. However, these factors did not appear to moderate the DEM-REM relationship. These findings have critical implications for regulators and policymakers in addressing earnings management practices and enhancing corporate governance in Malaysia. Focusing on institutional ownership and audit firm size may help curtail such practices, contributing to Malaysia's progress towards the Sustainable Development Goals. Future research should explore other potential moderating variables and distinctive corporate governance features that could also impact the DEM-REM relationship. © 2023 Conscientia Beam. All Rights Reserved.

## Explainable housing price prediction with determinant analysis

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DOI: 10.1108/IJHMA-02-2022-0025

**Purpose:** This study aims to develop a regression-based machine learning model to predict housing price, determine and interpret factors that contribute to housing prices using different data sets available publicly. The significant determinants that affect housing prices will be first identified by using multinomial logistics regression (MLR) based on the level of relative importance. A comprehensive study is then conducted by using SHapley Additive exPlanations (SHAP) analysis to examine the features that cause the major changes in housing prices. **Design/methodology/approach:** Predictive analytics is an effective way to deal with uncertainties in process modelling and improve decision-making for housing price prediction. The focus of this paper is two-fold; the authors first apply regression analysis to investigate how well the housing independent variables contribute to the housing price prediction. Two data sets are used for this study, namely, Ames Housing dataset and Melbourne Housing dataset. For both the data sets, random forest regression performs the best by achieving an average R2 of 86% for the Ames dataset and 85% for the Melbourne dataset, respectively. Second, multinomial logistic regression is adopted to investigate and identify the factor determinants of housing sales price. For the Ames dataset, the authors find that the top three most significant factor variables to determine the housing price is the general living area, basement size and age of remodelling. As for the Melbourne dataset, properties having more rooms/bathrooms, larger land size and closer distance to central business district (CBD) are higher priced. This is followed by a comprehensive analysis on how these determinants contribute to the predictability of the selected regression model by using explainable SHAP values. These prominent factors can be used to determine the optimal price range of a property which are useful for decision-making for both buyers and sellers. **Findings:** By using the combination of MLR and SHAP analysis, it is noticeable that general living area, basement size and age of remodelling are the top three most important variables in determining the house's price in the Ames dataset, while properties with more rooms/bathrooms, larger land area and closer proximity to the CBD or to the South of Melbourne are more expensive in the Melbourne dataset. These important factors can be used to estimate the best price range for a housing property for better decision-making. **Research limitations/implications:** A limitation of this study is that the distribution of the housing prices is highly skewed. Although it is normal that the properties' price is normally cluttered at the lower side and only a few houses are highly price. As mentioned before, MLR can effectively help in evaluating the likelihood ratio of each variable towards these categories. However, housing price is originally continuous, and there is a need to convert the price to categorical type. Nonetheless, the most effective method to categorize the data is still questionable. **Originality/value:** The key point of this paper is the use of explainable machine learning approach to identify the prominent factors of housing price determination, which could be used to determine the optimal price range of a property which are useful for decision-making for both the buyers and sellers. © 2022, Emerald Publishing Limited.



## Exploring the effects of place attachment and positive emotions on place satisfaction and intentional behaviour in Iranian ski resort: a perspective from S-O-R model

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6929

This study developed conceptual framework based on the SOR model consisting place attachment, positive emotion and place satisfaction to investigate the behavioural intentions of visitors in an Iranian ski resort. A total of 290 respondents participated in the study, who were ski resort tourists in Pooladkaf, a relatively new and upcoming ski resort in Iran. The data was analysed via Partial Least Squared structural equation modelling. Findings highlighted the importance of place attachment and positive emotions as predictors of place satisfaction and intention behaviour. Place satisfaction was also found to have a full mediating effect on the relationships between place attachment, positive emotions and behavioural intention. The study contributes to the literature by elucidating the mediating effects of satisfaction within the ski resort context, which has not been examined to a great extent in the current literature. Our study also highlighted the crucial role played by positive emotions in enhancing tourists' sense of satisfaction which consequently influences future behaviours. Destination marketers and operators of ski resorts ought to focus on improving service quality, infrastructure and marketing communications strategies in order to engender a greater sense of satisfaction, attachment and positive emotions, which have been shown to have a strong bearing on tourist behaviour intentions and thus, lead to revisit behaviours and the spread of positive word-of-mouth. © 2023 Informa UK Limited, trading as Taylor & Francis Group.

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## Exploring the Potential Use of Holographic Technology Through Remote Communication Technology in the Malaysian Courts: A Legal Perspective

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DOI: 10.36745/IJCA.521

A hologram is a three-dimensional image created by a laser beam. It is produced by using technology such as 3D scanners, cameras, and computer-generated models. Holographic technology has the potential to revolutionise the way court proceedings are conducted in Malaysia by making it easier for witnesses and victims to provide testimony and for lawyers to present cases more vividly and engagingly. Judges could also be represented as artificial creations without the presence of an actual judge in a courtroom whose image is beamed to a mobile phone or any other device. This research aims to analyse the existing legal provisions that permit the utilisation of remote communication technology for court proceedings and examine the adequacy of the statutory provisions to enable the use of holograms in a virtual court setting in Malaysia. The paper highlights the key judicial reforms that have been undertaken by the Malaysian judiciary through the use of technology. However, the paper concludes by arguing that initiatives and efforts must continue to be implemented from- time to time to enhance the efficiency of the Judiciary at all levels and to improve the delivery system. © 2023 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>. International Journal for Court Administration is a peer-reviewed open access journal published by International Association for Court Administration. All Rights Reserved.

## Face Recognition and Physiological Signal for Impaired Drivers: A Review

The use of Facial Recognition (FR) technology has become increasingly prevalent in a wide range of applications, from security to social media. The ability to identify individuals based on their facial features has proven to be a valuable tool in many real-world scenarios. However, one area that has yet to be fully explored is the use of FR technology in detecting impaired drivers. Driving under the influence of alcohol is a significant public health issue, and the development of reliable and accurate methods for detecting impaired drivers is crucial. While various Physiological Signal (PS) based methods have been developed for this purpose, the use of FR technology in this context has been largely overlooked. This gap in research provides a motivation to look into potential approaches that not only apply FR but also focus on PS. This paper aims to highlight the significance of FR and PS for detecting impaired drivers. It provides an overview of the related works in this area. Additionally, it identifies potential research gaps and discussion for further investigation. © 2023 IEEE.

Seong L.J.; Yogarayan S.;  
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10262615

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## FDI inflows spillover effect implications on the Asian-Pacific labour productivity

This study examines Foreign Direct Investment (FDI) inflows spillover effects influence on the labour productivity of the most important Asian-Pacific countries (Malaysia, Indonesia, Singapore, Philippines, Thailand, China, Japan, Korea, India, Australia and New Zealand). The modified-intensive growth theory model that is based on labour productivity (out per worker) is employed. Both growth accounting and econometric approaches are combined to estimate input terms (explanatory variables) parameters in the first step followed by the second step that plugs the estimated coefficients into the modified model to calculate the productivity indicators. The results show that the FDI inflows spillover effects are input-driven which was generally more predominant than total factor productivity (TFP) per worker (intensity) growth that is expressed the combined contribution of inputs' qualities technological progress or what so-called productivity-driven. TFP intensity growth results show that most of the selected Asian-Pacific counters economic growth is considered to be an input-driven and highly dependent on absorptive capacity per worker. This indicates that the FDI spillover effects (absorptive capacity) have a significant and low impact on these economies. However, the economies of Japan, South Korea and China showed productivity-driven growth among Asian countries under study. Besides, Australia and New Zealand showed productivity-driven as resource-based economies. The technology transfers and human capital skills development or what so-called FDI spillover effects contribute significantly in the cases of Japan, South Korea, and China among the Asian countries. For these countries to achieve the New Economic Model of development to sustain its long-run economic growth, to be a high income and knowledge-driven economy based on high-skilled human capital, the productivity must be given top priority. © 2021 John Wiley & Sons, Ltd.

Ahmed E.M.; Kialashaki R.

DOI: 10.1002/ijfe.2437

## **Factor Influencing Continuation Intention of Using Fintech from the Users' Perspectives: Testing of Unified Theory of Acceptance and Use of Technology (UTAUT2)**

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DOI:  
10.14716/ijtech.v14i6.6636

Fintech adoption has risen significantly in its use and acceptance in Malaysia, as 84.2% out of the total population of 32.7 million in Malaysia are currently Internet users. The Fintech system has been providing greater benefits to users more effectively and efficiently in this fast-paced era, especially with the collaboration of three enormous e-wallet companies (e.g., Touch'n Go, Boost, and Grab). However, numerous studies have indicated that perceived technology security is a potential determinant that impacts continuation intention due to the uncertainties and trust issues of using a particular technology. Therefore, this study aims to investigate the factors that contributed to the continuation intention of using Fintech applications from the user's perspective. The research uses the Unified Theory of Acceptance and Use of Technology (UTAUT2) to guide the study by including perceived technology security to expand the UTAUT2 theory. The study applied a quantitative (survey) design and 366 valid fintech users were secure as the respondents through purposive sampling. The results of the study indicated that performance expectancy, facilitating conditions, hedonic motivation, and habit have a positive and significant relationship with the continuance intention of using the Fintech applications. However, social influence and perceived technology security were not the determinants that contributed to the continuance intention of Fintech applications. Conclusion, implications, and future research suggestions were also discussed. © (2023), (Faculty of Engineering, Universitas Indonesia). All Rights Reserved.

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## **Fintech literacy among millennials: The roles of financial literacy and education**

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1046

While readily available fintech products are in rise for consumers, the lack of basic fintech literacy (FTL) may preclude them fully utilize its benefits. This study aims to investigate FTL, and then identifies if actual financial literacy, perceived financial literacy and demography predict FTL. Using millennials from Malaysia, the study reports that (a) millennials show medium level of FTL; (b) they display higher literacy on P2P lending, but lower on machine learning; (c) high fintech literacy millennials are male, younger, Chinese and highly educated; (d) actual financial literacy is positively associated with machine learning and crowdfunding literacy, whereas perceived financial literacy is negatively associated with robo-advisor's literacy; (e) education has a significant positive impact on fintech's definition, machine learning, blockchain, P2P lending and crowdfunding; (f) age has an inverse relationship with cryptocurrency and blockchain literacy. Ethnicity and gender also contribute to FTL. Implications are discussed for millennials and fintech service providers. © 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

## Factors influencing acceptance of Robo-Advisors for wealth management in Malaysia

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8992

Since the 2008 global financial crisis, many innovations have emerged in the financial sector as investors started to look for alternative methods to eliminate irrational decision-making in wealth management, and Robo-advisors is among those. Nine years after the first launching of Robo-advisors in the U.S. in 2008, the Securities Commission Malaysia has been issuing licenses to seven Robo-advisor platforms. The current COVID-19 outbreak has made this industry more in demand, increasing 763% in registration in 2020. However, much skepticism about Robo advisors' ability and reliability in providing a similar quality or better advisory service compared to human-financial advisors. Therefore, this study examines the factors influencing the acceptance of Robo-advisors in wealth management in Malaysia. Adopting some factors from various established technology acceptance models, an online survey with 122 respondents was conducted using convenience sampling. Findings show that Relative Advantage, Effort Expectancy, and Social Influence significantly positive influence the Malaysian Behavioral Intention to Accept Robo-Advisors. On the contrary, there is no significant relationship between Perceived Risk and Malaysian Behavioral Intention to Accept Robo-Advisors. The study provides a positive insight into factors influencing the acceptance of Robo-Advisors in Malaysia. © 2023 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

## Feature Selection of Microarray Data Using Simulated Kalman Filter with Mutation

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DOI: 10.3390/pr11082409

Microarrays have been proven to be beneficial for understanding the genetics of disease. They are used to assess many different types of cancers. Machine learning algorithms, like the artificial neural network (ANN), can be trained to determine whether a microarray sample is cancerous or not. The classification is performed using the features of DNA microarray data, which are composed of thousands of gene values. However, most of the gene values have been proven to be uninformative and redundant. Meanwhile, the number of the samples is significantly smaller in comparison to the number of genes. Therefore, this paper proposed the use of a simulated Kalman filter with mutation (SKF-MUT) for the feature selection of microarray data to enhance the classification accuracy of ANN. The algorithm is based on a metaheuristics optimization algorithm, inspired by the famous Kalman filter estimator. The mutation operator is proposed to enhance the performance of the original SKF in the selection of microarray features. Eight different benchmark datasets were used, which comprised: diffuse large b-cell lymphomas (DLBCL); prostate cancer; lung cancer; leukemia cancer; "small, round blue cell tumor" (SRBCT); brain tumor; nine types of human tumors; and 11 types of human tumors. These consist of both binary and multiclass datasets. The accuracy is taken as the performance measurement by considering the confusion matrix. Based on the results, SKF-MUT effectively selected the number of features needed, leading toward a higher classification accuracy ranging from 95% to 100%. © 2023 by the authors..

## **Flower Species Recognition using DenseNet201 and Multilayer Perceptron**

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10262593

Flower species recognition is the task of identifying the species of a flower from an image. It involves using computer vision techniques and machine learning algorithms to analyze the visual features of the flower in the image and match them to a known database of flower species. Flower species recognition is a challenging task due to the variations in color, shape, and size among different flower species. Accurate flower species recognition has important applications in fields such as agriculture, botany, and environmental conservation. In view of this, this research paper presents a deep learning approach for flower species recognition using a combination of DenseNet201 and MLP. The proposed model leverages the strengths of both models for enhanced performance in recognizing flower species. DenseNet201 is known for its ability to capture complex features in images, while MLP is a powerful tool for learning nonlinear relationships between features. The model achieves impressive classification results on multiple datasets, including 94.47% accuracy on Kaggle, 98.23% and 97.35% on Oxford17 for two different protocols, and 79.13% on Oxford102. © 2023 IEEE.

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## **Free device location independent WiFi-based localisation using received signal strength indicator and channel state information**

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DOI: 10.1049/wss2.12065

The trajectory localisation of human activities using signal analytics has become a reality due to the widespread use of advanced signal processing systems. Device-free localisation using WiFi devices is prevalent, and the received signal strength indicator (RSSI) and channel state information (CSI) signals offer additional benefits. However, radio frequency (RF) localisation is highly dependent on the environment, so updating fingerprint data is necessary by changing the environment. This work presents Fine-grained Indoor Detection and Angular Radar for recognising and locating humans using a multipath trajectory reflections system that does not require training. It estimates location using a probabilistic approach that considers changes in CSI and RSSI across multiple nodes, generating an informative dataset that reflects the current trajectory and status of the location. The presented method extracts data from clustered Raspberry Pi 4B and Nexmon. The method exhibits a versatile real-time location-tracking solution by utilising the distinctive properties of RF signals. This technology has significant implications for various applications, including human medical monitoring, gaming, smart cities, and optimising building layouts to improve efficiency. The model demonstrates location-independent localisation with up to 80% accuracy in mapping trajectories at any location. The findings indicate that the proposed model is effective and reliable for indoor localisation and activity tracking, making it a promising solution for implementation in real-world environments. © 2023 The Authors. IET Wireless Sensor Systems published by John Wiley & Sons Ltd on behalf of The Institution of Engineering and Technology.

## Forecasting the unrevealed surface-controlled photocatalytic water splitting in two-dimensional Ag<sub>2</sub>Se with ultrafast carrier mobility: a first-principles study

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Lim T.L.; Tuh M.H.

DOI: 10.1039/d3cy00628j

It has been hypothesized that a thermodynamically feasible Ag<sub>2</sub>Se monolayer could be a potential candidate for photocatalytic water splitting. However, the present electronic structure knowledge is insufficient for forecasting and confirming the ultimate criterion of photocatalysis. Its wide band gap of around 2.70 eV is also non-ideal for photovoltaic conversion. These challenges are addressed herein using first-principles density functional theory (DFT) calculations to systematically probe the photocatalytic potential, light absorption coefficient, carrier mobility and carrier utilization efficiency of Ag<sub>2</sub>Se. To ascertain the spontaneity of the solar-to-hydrogen conversion, significant efforts have been made to calculate the energy barriers for the surface hydrogen evolution reaction (HER) and oxygen evolution reaction (OER). Fascinatingly, upon -6% compressive biaxial straining, the Ag<sub>2</sub>Se monolayer ingeniously combines all the desired characteristics for photocatalytic water-splitting activity, including a broader sunlight absorption region (~105 cm<sup>-1</sup>), enhanced carrier mobility (~105 cm<sup>2</sup> V<sup>-1</sup> s<sup>-1</sup>) and spontaneous catalytic pathways with relatively low triggering external potential, while retaining a direct band gap, good thermal stability and perfect band edge position. The corrected STH efficiency of ~10% suggests commercial hydrogen production. This work provides valuable insights into the understanding of the catalytic mechanisms in the strain-modulated Ag<sub>2</sub>Se monolayer. © 2023 The Royal Society of Chemistry.

## Functionalized electrospun biobased polymeric materials in filtration

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91677-6.00009-X

Due to its wide range of application, high removal capacity, and low cost, membrane separation technique is considered as one of the most prominent technologies for water filtration. Nevertheless, fouling of membrane is a serious obstacle using membrane filtration process. To address fouling in membrane, researchers have explored different types of modification options, including the integration of hydrophilic inorganic components or metal oxide nanoparticles (MO) loaded onto the electrospun bio and synthetic polymer-based membrane. Zinc oxide (ZnO) nanoparticles have been used extensively as a low-cost, eco-friendly, and hydrophilic material. ZnO nanoparticles (NPs) can not only provide antifouling properties to the composite membranes but also provide a photocatalytic self-cleaning capability. It possesses strong antibacterial effects. As a result, polymer-ZnO composite membranes were identified as an appealing hot issue for waste water filtration process. The chapter highlights regarding the recent advances in electrospun polymeric (bio and synthetic polymer) materials that include MO nanoparticles for mitigation of fouling and water purification. Membrane functionalization processes using biopolymer-based nanofiber were also illustrated. The performance assessment, constraints, and possible trends for future research on synthesizing the nanofibrous composite membranes in wastewater treatment are discussed in subsequent section. © 2023 Elsevier Inc. All rights reserved.

## **Fusion of Visual and Acoustic Signals for Wildlife Recognition**

Ong C.T.; Connie T.; Goh M.K.O.; Choo K.Y.

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In recent years, wildlife-vehicle collisions (WVC) on highways have become a serious problem, causing harm to both wild animals and drivers. Wildlife surveillance has emerged as an important tool to address this issue. CCTV systems can provide low-cost wildlife monitoring, but their performance can be hindered by environmental factors such as low light and poor weather conditions, leading to blurry and grainy imageries. To address these limitations, we propose a robust approach that integrates visual and acoustic signals for improved wildlife recognition. Our method utilizes machine learning techniques to extract features from both modalities and combines them through a multi-modal fusion framework. We evaluate our approach on a dataset of wildlife recordings and demonstrate its superiority over state-of-the-art methods that rely solely on visual or audio information. Our results highlight the potential of integrating visual and audio signals for wildlife recognition, with potential applications in conservation and ecological research. © 2023 IEEE.

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## **Impact of corporate social responsibility practices on consumer purchase intention of apparel products with mediating role of consumer-retailer love**

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Ho P.S.Y.; Akhtar M.F.

DOI: 10.1108/SRJ-09-2023-0491

**Purpose:** Companies with corporate social responsibility (CSR) practices care about customers, society, the environment and workers. This study aims to examine the impact of CSR practices (i.e. economic CSR, environmental CSR and societal CSR) on consumers' purchase intention of apparel products, with the mediating role of consumer-retailer love on this relationship. **Design/methodology/approach:** Data gathered using purposive sampling technique from 300 young online consumers using purposive sampling were analyzed using partial least squares structural equation modeling via SmartPLS3.0. **Findings:** The results reveal that CSR practices (i.e. environmental CSR and societal CSR) have a positive influence on purchase intention for apparel products. Moreover, consumer-retailer love mediates the relationship between CSR practices (i.e. economic CSR and environmental CSR) and consumers' purchase intention for apparel products. **Practical implications:** Apparel retail marketers should focus on key determinants when designing CSR campaigns and communicating these CSR initiatives in social media and annual reports. They should also focus on their service quality to create a good perception (images) that helps measure the emotional response (love) between the retailer and consumers. **Originality/value:** By applying the triple bottom line framework and the stimulus-organism-response model in a single framework, this study is unique and highlights the role of consumer-retailer love as an important mediator on the impact between CSR practices (i.e. economic CSR, environmental CSR, societal CSR) and consumers' purchase intention of apparel products. The findings represent a new contribution to the existing literature, as there has been very limited research on this relationship in a developing nation context. © 2023, Emerald Publishing Limited.

## Green Technological Progress Implications on Long-Run Sustainable Economic Growth

Ahmed E.M.; Elfaki K.E.

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The main objective of this study is to model and examine the green technological progress's positive and negative externalities spillover effects on the sustainable economic growth of 15 economies from Asia, the Pacific, and Latin America. The study calculated labour and capital contributions to green total factor productivity growth via the inclusion of CO<sub>2</sub> emissions as undesirable output or private unpriced input and energy consumption that proxies for unmeasured pollutant emissions. The results, in most cases, confirm that a high level of air pollutant emissions generated by these countries' economic development affected the growth rates of TFP growth as an indicator of green technological progress. The significant contribution of this study is to integrate innovation and climate change in the form of green productivity (green technological progress). The role of these externalities on long-term sustainable economic growth has been ignored by several past studies undertaken in these areas. © 2023, The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature.

## How older adults' health beliefs affect intention to perform COVID-19 self-examination: A reasoned action approach

Lai K.P.; Chong S.C.; Lin B.

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**BACKGROUND:** COVID-19 self-examination is a significant part of the national recovery plan against the virus. Although it is easier to perform COVID-19 self-examination (CSE), only a small percentage of people prefer it. There are no precise statistics on CSE in Malaysia, but informal data from news agencies imply low CSE. Lack of awareness and conflicting information about the reliability of CSE results may have raised concerns about CSE's efficacy and effectiveness. **OBJECTIVE:** This study investigates how Malaysian older adults' health beliefs influence their intention to perform CSE. The study developed a framework combining illness threats (ITH), perceived barriers (PBA), medical motivations (MMO), and control over illness (COI) from the Health Belief Model (HBM) with the Reasoned-Action Approach's attitude (ATT), perceived control (PCO), and intention (INT). **METHODS:** Structural Equation Modelling (SEM) analyses were conducted with AMOS 26 software to determine the influence of HBM on older adults' attitude, perceived control, and intention. The study collected 200 data for the pilot study and 400 data for hypotheses testing. **RESULTS:** ITH, MMO, and COI have positive effects, whilst PBA affects ATT negatively. ITH and COI positively impact PCO, and PCO has a greater significant effect on INT than ATT. **CONCLUSION:** Given the HBM's role in influencing older adults' intention to perform COVID-19 self-examination, providing different levels of care and emphasising the perception of knowledge of illness are especially beneficial. Several recommendations are made to ensure that CSE remains relevant for older adults' well-being, although COVID-19's impact has become more stabilised. © 2023-IOS Press. All rights reserved.



## HER2-Sish Histopathology Image Classification Using Deep Neural Networks

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222930

The status of the human epidermal growth factor receptor 2 (HER2) gene amplification is an important marker for assessing the efficacy of clinical treatments for breast cancer. This article discusses the application of deep learning to classify HER2-SISH (silver-enhanced in situ hybridization) pathological images and identifies their HER2/Chr17 amplification status. We used four pre-trained models for classifying the cases into either amplified or non-amplified: two models from the convolutional neural networks, CNNs (DenseNet, and MobileNet), and two transformer models (Vision Transformer, and Data-Efficient Image Transformers). Apart from these single models, we also built two ensemble models by concatenating the transformer and CNN architectures to observe their performances. A private dataset obtained from our collaborating hospital is used in this project, with several preprocessing techniques applied to the raw images prior to feeding the models. Promising results are reported with ViT emerged as the best performing model with a high accuracy of 87.48%, with 92.93% recall in detecting amplified HER2-SISH samples. © 2023 IEEE.

## Improved Adam-based Feedforward Deep Neural Network Model for Personalized Asthma Predictions

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A Feedforward Deep Neural Network (FDNN) model contains densely connected layers where backpropagation is applied to calculate the loss function gradients. Optimising the network weights is important to minimise the loss value, hence decreasing the prediction errors and increasing the accuracy rate. Optimisers are used to update the weight values or the learning rate for each weight. Recent studies show that, although Adaptive Moment Estimation (Adam) produces better results in terms of optimising the parameters of the FDNN model, it might lead to poor generalisation performance. Therefore, in this paper, an improved Adam-based FDNN model was built for personalised predictions of asthma. Data transformation techniques (standardisation and normalisation) and regularisation techniques (dropout and max-norm constraint) were applied. Several experimental models were trained, and their prediction performance were compared. The empirical findings reveal that the best prediction results with low loss value can be obtained when the model is trained with standardised inputs and normalised outputs. Moreover, applying dropout ( $p=0.1$ ) with max-norm ( $c=3$ ) minimises the generalisation error of the model effectively. The results also show that the improved Adam-based FDNN model (with 2 hidden layers and 50 hidden nodes) produces better performance results with lower prediction loss (Mean Absolute Error (MAE)=0.0409, Mean Squared Error (MSE)=0.0038, and Root Mean Squared Error (RMSE)=0.0618) and higher accuracy rate (96%) than Stochastic Gradient Descent (SGD), Root Mean Squared Propagation (RMSProp), and Adaptive Gradient Descent (AdaGrad). Consequently, the proposed model can be used for personalised asthma predictions based on demography and weather. © 2023, Success Culture Press. All rights reserved.

## Hybrid Wireless Home Security System Using Bluetooth and IoT Technologies

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8406-8\_39

Home security systems are a must-have for any home in any part of the world to help protect our homes and other places alike. The main threats people face include intruders, break-ins, robberies, and fires, to mention but a few. While some of these threats, such as fires, can be contained by automatic actuators, others, such as break-ins and robberies, can't be prevented by automatic systems. The implementation of technologies such as surveillance cameras and the Internet of Things (IoT) is able to prevent such criminals, but they all require internet connection, high power consumption, and a high cost of setup and maintenance, which cannot be afforded by low-income earners. Hence, this paper intends to address some of the issues as stated above by proposing a hybrid wireless home security system that is able to provide low-end functions without the internet ability as well as high-end functions with the internet connection. For the low-end setup, Bluetooth is chosen. Meanwhile, IoT is implemented for high-end purposes. The proposed system includes the functions of breaching and fire alerts, as well as the control of light for energy saving. A new method has also been proposed in order to reduce the breach detection errors from the infrared (IR) sensors. Finally, a final prototype for the performance demonstration has been successfully built to showcase the functions of Bluetooth and IoT technologies. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

## Implementation of a psychomotor vigilance test to investigate the effects of driving fatigue on oil and gas truck drivers' performance

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7

Introduction: Driving fatigue has been shown to increase the risk of accidents and potentially fatal crashes. Fatigue is a serious risk that some drivers do not take seriously. Previous studies investigated the effects of driving fatigue in the Malaysian oil and gas transportation industry by employing survey questionnaires. However, they did not explain the behavior of fatigue. Besides, these results required validation by a more reliable method that can describe how fatigue occurs. Methods: Thus, in this study, we used the Psychomotor Vigilance Test (PVT-192) and a short survey to address driving fatigue behavior and identify the influences of driving fatigue on driving performance in real life (on the road) with actual oil and gas tanker drivers. The total participants in the experimental study were 58 drivers. Results: For the analysis, a Wilcoxon Signed Ranks Test, Z value and Spearman's rho were used to measure the significant difference between the pre and post-tests of PVT and the correlation between the fatigue variables and driving performance. Discussion: During the experiment's first and second days, this study's results indicated that driving fatigue gradually escalated. Likewise, there was a negative correlation based on the test of the relationship between the PVT data and the driving performance survey data. Additionally, the drivers suffer from accumulative fatigue, which requires more effort from the transportation company management to promote the drivers awareness of fatigue consequences. Copyright © 2023 Al-Mekhlafi, Isha, Al-Quraishi and Kanwal.

## Hydrothermal duration effect on the self-assembled TiO<sub>2</sub> photo-anode for DSSC application

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07

Dye-sensitized solar cell (DSSC) has been extensively researched over the past few decades due to its facile and low-cost fabrication process compared to the silicon solar cell. Generally, the photo-anode of the DSSC consists of a titanium dioxide (TiO<sub>2</sub>) film deposited on a transparent conducting oxide (TCO) substrate. Hydrothermal method is the most widely adopted technique for the synthesis of TiO<sub>2</sub> photo-anode. Nevertheless, the optimum hydrothermal synthesis parameters have yet to be elucidated. In this work, the influences of hydrothermal duration on the self-assembled TiO<sub>2</sub> photo-anode were investigated. It was discovered that the rutile content in the TiO<sub>2</sub> photo-anodes can be controlled by adjusting the hydrothermal durations. The highest DSSC efficiency of 3.88% was achieved at an optimum hydrothermal duration of 10 h, corresponding to a rutile content of 80.43%. The improvement in DSSC efficiency can be ascribed to the reduced electron-hole recombination resulting from electron transfer from rutile to anatase lattice trapping sites, thereby improving the photocurrent. However, when the hydrothermal durations exceeded 10 h, the DSSC efficiency dropped due to the agglomeration of the rutile TiO<sub>2</sub> resulted from excessive rutile content, which led to decreased surface area for dye adsorption and hence lower photocurrent. The results suggest the importance of controlling the hydrothermal duration on the synthesis of TiO<sub>2</sub> photo-anode. © 2023 Elsevier B.V.

## Fuzzy Logic Modelling for Microwave Heat Treatment of Aluminium Sheet

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C.C.; Perumal L.

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10.14716/ijtech.v14i2.5578

Microwave energy heating is one of the methods to improve product quality, faster processing, eco-friendliness, and cost and energy savings. The unique heating ability leads to explore this heat treatment method by exploiting its process parameters to improve its effectiveness. This research aimed to predict the effect of microwave heat treatment on aluminium alloy 6063-T6 sheets using fuzzy logic. Microwave heat-treatment trials are designed using the Design of Experiment (DOE) method. The input parameters are heating time, susceptor, and insulator. The non-heated and heated aluminium 'specimen's mechanical properties have been tested using a hardness and tensile testing machine. The experimental results are used to develop a Mamdani fuzzy logic model system. The results indicate that the mechanical properties in terms of tensile Load, and hardness of the specimen have improved after being microwave heat-treated for a short time. The susceptor material and insulator can assist in the microwave processing of materials. The percentage difference between the experimental and simulation values are 0.27 and 6.31%, respectively, for tensile Load and hardness. The experimental and predicted results are still compatible with a small percentage of errors. The fuzzy model can be used to predict the parameters. © 2023, International Journal of Technology. All Rights Reserved..

## Improving Reliability for Detecting Anomalies in the MQTT Network by Applying Correlation Analysis for Feature Selection Using Machine

Imran; Zuhairi M.F.A.; Ali S.M.; Shahid Z.; Alam M.M.; Su'ud M.M.

DOI: 10.3390/app13116753

Anomaly detection (AD) has captured a significant amount of focus from the research field in recent years, with the rise of the Internet of Things (IoT) application. Anomalies, often known as outliers, are defined as the discovery of anomalous occurrences or observations that differ considerably from the mainstream of the data. The IoT which is described as a network of Internet-based digital sensors that continuously generate massive volumes of data and use to communicate with one another the Message Queuing Telemetry Transport (MQTT) protocol. Brute-force, Denial-of-Service (DoS), Malformed, Flood, and Slowite attacks are the most common in the MQTT network. One of the significant factors in IoT AD is the time consumed to predict an attack and take preemptive measures. For instance, if an attack is detected late, the loss of attack is irreversible. This paper investigates the time to detect an attack using machine learning approaches and proposes a novel approach that applies correlation analysis to reduce the training and testing time of these algorithms. The new approach has been evaluated on Random Forest, Decision Tree, Naïve Bayes, Multi-Layer Perceptron, Artificial Neural Network, Logistic Regression, and Gradient Boost. The findings indicate that the correlation analysis is significantly beneficial in the process of feature engineering, primarily to determine the most relevant features in the MQTT dataset. This is, to the best of our knowledge, the first study on MQTTset that reduces the prediction time for DoS 0.92 (95% CI -0.378, 2.22) reduced to 0.77 (95% CI -0.414, 1.97) and for Malformed 2.92 (95% CI -2.6, 8.44) reduced to 0.49 (95% CI -0.273, 1.25). © 2023 by the authors.

## Industry approaches in handling online exploitation of children: A comparative study of the policy, guidelines and best practices in Malaysia, Singapore and Australia

Cooray M.A.E.; Ahmad Rajuhan I.S.B.; Binti Adnan W.N.A.

DOI:  
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Child Exploitation on the Internet is an issue of international importance. Despite notable efforts taken by nations to prevent the online exploitative use of children, the problem remains a serious issue. Although one entity cannot take responsibility for regulating the material, there seems to be an added responsibility placed on Internet Service Providers as gatekeepers of information on the Internet to take possible measures to regulate the material. This study focuses on industry regulatory initiatives, including policy, guidelines, and best practices that are enforceable by the communications and multimedia industry, with a focus on Content Service Providers in handling online exploitation of children in Malaysia. This article begins by examining the current legislative framework provided in the Communications and Multimedia Act of 1998 and the Content Code in Malaysia. The article then examines the Online Safety Act 2021 of Australia and the Online Safety (Miscellaneous Amendments) Act 2022 of Singapore, which was passed in Parliament on 9 November 2022, and takes effect from first NaN Invalid Date with a focus on industry service provider towards content regulation. Finally, the article concludes by proposing recommendations from the Australian and Singaporean legislative frameworks as points of reference for best practices in regulating content in Malaysia. © 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

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## **Influences of time perspectives and perceived values on continuance intention to engage in social media amongst older adults for healthcare-related purposes**

Lai K.P.; Chong S.C.

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Although communicating healthcare information via social media is becoming more common, less is known about older adults who suffer from digital inequalities regarding how they perceive the values from engaging in social media for healthcare-related purposes. Time perspective theory suggests that older adults' perceptions of time influence their value assessments and actions. The paper investigates whether the effects of time perspective (present- and future-time) and its interaction with perceived values (hedonic, emotional, informational and social) explain older adults' continuance intention to engage in social media for healthcare-related purposes. About 400 responses from older adults (above 60 years) were collected and analyzed using the structural equation modelling procedure. Different time perspectives result in biases in older adults' perception of values, which discourages their social media engagement and leads to negative consequences for actively promoting online communication, including negative social value and negative social engagement attitude. Contrary to earlier findings, this study indicates that the present-time perspective has no effect on hedonic and informational values, whereas the future-time perspective has a negative influence on hedonic and social values. Further, hedonic and emotional values decrease the likelihood of continuance interaction with peers. The time perspectives affect different perceived values, which in turn affects the continuance intention to engage in social media for healthcare-related purposes. The findings demonstrated that time perspective theory operates in the opposite direction between the present and future time. The results reinforce the importance of enjoyment and emotional values and the irrelevance of informative and social values in examining older adults' social media behaviors. © 2021, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.

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## **Intelligent multimedia technologies for financial risk management: Trends, tools and applications**

Grima S.; Sood K.; Rawal B.; Balusamy B.; Özen E.; Gan G.G.G.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85166061465&partnerID=40&md5=74ea34c518177c6bf28df2ec49e8f90>

Multimedia technologies have opened up a wide range of applications by combining a variety of information sources such as voice, graphics, animation, images, audio, and full-motion video which can be successfully implemented in banking, financial services and insurance (BFSI) industries to support their activities and strategic goals. This volume provides an overview of multimedia technologies in finance and banking, introduces suitable machine learning and deep learning techniques for financial data analysis, discusses fraud and cyber operation countermeasures for multimedia in financial services, presents concrete applications of natural language processing (NLP) for financial data, introduces robotic process automation technology from the financial market to technology implementation, explains how self-supervised, unsupervised and semi-supervised learning are driving the financial market revolution, and unlocks real-world case studies in multimedia banking across the globe. The book is intended for professionals involved in multimedia systems and technology design and applications. It can also be used as an advanced text for courses on multimedia. © The Institution of Engineering and Technology 2023. All rights reserved.

## **Information Technology Capability (ITC) Framework to Improve Learning Experience and Academic Achievement of Mathematics in Malaysia**

Ling L.S.; Krishnasamy S.

DOI:  
10.34190/ejel.21.1.2169

Poor mathematics performance was generally reported from international assessments such as Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) among Malaysian students. Malaysia is ranked 52nd and 48th in the assessments for 2012 and 2018 respectively, while Singapore, Japan, South Korea, and even Vietnam have consistently performed well and held the top spots among the 78 countries evaluated in the PISA. Although numerous new technologies have been introduced, developed and implemented for education, incorporation of IT capability (ITC) to teach and learn Mathematics where still lacking commonly. Additionally, learning Mathematics in the traditional teaching contents could not accomplish desired learning outcomes because of dry contents and dull teachers. Therefore, this study is to design an appropriate ITC framework for improving learning experience and academic achievement of learning Mathematics. This study has adopted the development model of Analysis, Design, Development, Implementation and Evaluation (ADDIE) and Mayer (2010)'s cognitive theory for multimedia instructional content design. This study developed a new Multimedia Probability and Statistics system (MMPASS) for a subject of Probability and Statistics. The developed topics were concepts of discrete random variables and probability distribution function which were puzzled by students from preliminary study. An experiment was conducted with both control and experimental groups. The developed MMPASS blended multiple influential multimedia elements in the learning contents. A quantitative method and proportional stratified sampling were used to collect data. The blended topics were used by the experimental group whilst the control group was solely learning using the existing learning contents. Questionnaires were distributed to both groups after the lessons. 66 students participated in this survey. The collected data was then analysed and an ITC model was formed. Results of this study show that Perceived System Quality, Perceived Information Content Quality and Perceived System Performance as independent variables significantly improved learning experience. The findings also reveal that the performances of the experimental group have a higher mean score (9.65/10.00) compared to the control group (8.03/10.00), indicating the use of MMPASS improved students' learning performance in subjects that involve understanding of concepts. While there is a lack of established ITC framework and IT application for Mathematics education in Malaysia, this study has verified the use of ITC improving performance of learning Mathematics in Malaysia. © The Authors.

## Integrating Grey Wolf Optimizer for Feature Selection in Birdsong Classification Using K-Nearest Neighbours Algorithm

Pramunendar R.A.; Andono P.N.; Shidik G.F.; Megantara R.A.; Pergiwati D.; Prabowo D.P.; Sari Y.; Soong L.W.

DOI: 10.22266/ijies2023.1231.58

This study aims to improve the classification accuracy of birdsongs by selecting the most pertinent features. This is important because birds are exceptional environmental regulators, but many species are endangered. The community can be assisted in distinguishing bird species and conserving the local environment if the classification is more precise. Nevertheless, because of disruptive noise and unfavorable qualities in the whispering of these bird species, feature selection focuses on enhancing performance accuracy. The use of the gray wolf optimizer (GWO) technique has been employed to identify the most optimum features from the data after outlier removal by the application of k-means clustering, reducing noise through YAMNet, and feature synthesis using gammatone cepstral coefficients (GFCC). This work utilizes the GWO algorithm to address the constraint management challenges associated with high-dimensional data in birdsong classification. The fitness functions used in this research are derived from the K-nearest neighbors (KNN) algorithm. The objective is to devise innovative ways for effectively managing constraints in the context of high-dimensional data. The number of features was reduced by more than 30.7% compared to the initial number of features and obtained an accuracy of 81.06%, as determined by the evaluation outcomes. This discovery improves precision by 4% and surpasses prior research. In summary, this work showcases the effectiveness of the optimization method, especially of GWO. It makes a valuable contribution to advancing a new workflow for analyzing high-dimensional data, specifically in enhancing the classification of birdsongs. © (2023), (Intelligent Network and Systems Society). All Rights Reserved.

## Machine learning assisted hepta band THz metamaterial absorber for biomedical applications

Jain P.; Chhabra H.; Chauhan U.; Prakash K.; Gupta A.; Soliman M.S.; Islam M.S.; Islam M.T.

DOI: 10.1038/s41598-023-29024-x

A hepta-band terahertz metamaterial absorber (MMA) with modified dual T-shaped resonators deposited on polyimide is presented for sensing applications. The proposed polarization sensitive MMA is ultra-thin ( $0.061 \lambda$ ) and compact ( $0.21 \lambda$ ) at its lowest operational frequency, with multiple absorption peaks at 1.89, 4.15, 5.32, 5.84, 7.04, 8.02, and 8.13 THz. The impedance matching theory and electric field distribution are investigated to understand the physical mechanism of hepta-band absorption. The sensing functionality is evaluated using a surrounding medium with a refractive index between 1 and 1.1, resulting in good Quality factor (Q) value of 117. The proposed sensor has the highest sensitivity of 4.72 THz/RIU for glucose detection. Extreme randomized tree (ERT) model is utilized to predict absorptivities for intermediate frequencies with unit cell dimensions, substrate thickness, angle variation, and refractive index values to reduce simulation time. The effectiveness of the ERT model in predicting absorption values is evaluated using the Adjusted R2 score, which is close to 1.0 for  $n_{min} = 2$ , demonstrating the prediction efficiency in various test cases. The experimental results show that 60% of simulation time and resources can be saved by simulating absorber design using the ERT model. The proposed MMA sensor with an ERT model has potential applications in biomedical fields such as bacterial infections, malaria, and other diseases. © 2023, The Author(s).



## Integration of Sensing Framework with a Decision Support System for Monitoring Water Quality in Agriculture

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Ismail I.; Jamaludin J.; Ab.  
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0

Water is an essential element for every plant to survive, absorb nutrients, and perform photosynthesis and respiration. If water is polluted, plant growth can be truncated. The aim of this research is to develop a water quality monitoring system for agriculture purposes based on integration of sensing framework with a smart decision support method. This research consists of three stages: (1) the first stage: developing sensing framework which has four different water quality parameter sensors such as potential hydrogen (pH), electrical conductivity (EC), temperature, and oxidation-reduction potential (ORP), (2) the second stage: developing a hardware platform that uses an Arduino for sensor array of data processing and acquisition, and finally (3) the third stage: developing soft computing framework for decision support which uses python applications and fuzzy logic. The system was tested using water from many sources such as rivers, lakes, tap water, and filtered machine. Filtered water shows the highest value of pH as the filtered machine produces alkaline water, whereas tap water shows the highest value of temperature because the water is trapped in a polyvinyl chloride (PVC) pipe. Lake water depicts the highest value of EC due to the highest amount of total suspended solids (TSS) in the water, whereas river water shows the highest value of ORP due to the highest amount of dissolved oxygen. The system can display three ranges of water quality: not acceptable (NA), adequate (ADE) and highly acceptable (HACC) ranges from 0 to 9. Filtered water is in HACC condition (ranges 7–9) because all water quality parameters are in highly acceptable ranges. Tap water shows ADE condition (ranges 4–7) because one of the water quality parameters is in adequate ranges. River and lake water depict NA conditions (ranges 0–4) as one of the water quality parameters is in not acceptable ranges. The research outcome shows that filtered water is the most reliable water source for plants due to the absence of dissolved solids and contaminants in the water. Filtered water can improve pH and reduce the risk of plant disease. This research can help farmers to monitor the quality of irrigated water which eventually prevents crop disease, enhances crop growth, and increases crop yield. © 2023 by the authors.

## Internet of things-enabled smart controller for polymer dispersed liquid crystals films

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Azmi A.S.; Pang W.-L.;  
Wong S.-K.

DOI:  
10.11591/ijece.v13i4.pp4708-4720

The evolvement of smart glass technology has gained a lot of interest through its energy-saving potential as one of the heating, ventilating, and air-conditioning (HVAC) system. This paper focuses on polymer dispersed liquid crystal (PDLC) film, a smart glazing film that changes its opacity in response to an electrical impulse. The power consumption of the smart film is considerably small. However, improper handling of the smart film such as not turning off the film after usage can lead to energy wastage. Hence, connecting the smart film to an internet of things (IoT) controller would be one of the possible solutions to ensure that the film is maintained properly. The objective of the work here is to develop a smart, low cost and efficient IoT-enabled smart controller for PDLC films with energy-saving features. In pursuance of materializing this concept, this paper delineates the design of a smart controller for the PDLC films. The implementation of the IoT features, NodeMCU, and environmental sensors enabled the smart film to be capable of switching automatically. In addition, voice-command features were also incorporated into the controller. With the successful development of the IoT smart controller, the PDLC films can operate autonomously and wirelessly. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

## Investigation of peripheral natural killer cell activity in recurrent miscarriages of unknown cause

Anaam E.A.; Haw S.-C.;  
Naveen P.; Ng K.-W.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85180187051&partnerID=40&md5=9890c3707828c5dea73b77d0cb11c07>

**Aim:** Recent studies on alloimmune factors have shown that Natural Killer (NK) cells may have a role in the implantation and maintenance of pregnancy. It is unclear precisely what kind of relationship exists between uterine and peripheral blood NK cells. Our study aims to investigate the relationship between pNK cells and recurrent pregnancy loss. **Material and Methods:** Among the patients who applied to the outpatient clinic at University Hospital, retrospectively, women with two or more pregnancy losses constituted the RM group, and women with two or more live births and no miscarriage formed the control group. Two or more miscarriages before 20 weeks of gestation were accepted as the criterion to consider a case of recurrent pregnancy loss. **Results:** To investigate the etiology of miscarriage in RM patients, parameters associated with the cytotoxicity of pNK cells in women with RM and control fertile women were evaluated. Although the median pNK activity level was relatively higher in the recurrent low group compared to the control group, there was no significant difference between the groups in our study ( $p=0.448$ ). **Discussion:** The present study found no significant difference in the percentages of CD56+dim and CD56+bright pNK cells between the patient group with unexplained RM and the healthy fertile control group. There was also no significant difference in CD8 and CD158a expressions in pNK cells between the patient group with unexplained RM and the healthy fertile control group. © 2023 Elham Abdulwahab Anaam, et al.

## **Is economic policy uncertainty detrimental to sustainability? Evidence from Asian countries**

Ng T.-H.; Lim Y.-S.; Lim Y.-Z.; Chan K.-H.; Lye C.-T.

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Despite the widespread recognition of the significance of long-term sustainability, there is as yet a relative paucity of evidence on what factors account for sustainability performance. In an effort to close the apparent gap in knowledge, this study contributes new empirical evidence to this discussion by considering the role of economic policy uncertainty. Inconsistent economic policy may undermine sustainability efforts as it creates a more complex and volatile operating environment, which, in turn, affects the behaviour of economic entities in the system. Drawing primarily on environmental management literature, this study aims to investigate the relationship between economic policy uncertainty and sustainability performance in the Asian regions between 2012 and 2020. With country-level annual data, this study estimates the model using a system generalised method of moments approach to address the possible biases resulting from serial correlation of random errors, simultaneity, and unobserved heterogeneity. Therefore, the estimates of this study will be consistent and asymptotically unbiased. The empirical analysis reveals that sustainability performance in Asia is adversely affected by economic policy uncertainty. The sustainability sub-components results are broadly in line with the main results that a higher economic policy uncertainty index is detrimental to the protection of natural capital and the development of social capital. This study concludes that ongoing economic policy uncertainty and disturbance could have serious repercussions for local economies, thereby hindering sustainability development. Overall, the findings of this study suggest that the establishment of sustainability development frameworks in areas of climate goals, social justice, and good governance would need to pay close attention to uncertainty in economic policy. © 2023, The Author(s), under exclusive licence to Springer Nature B.V.

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## **Optical Networking Technologies for 5G Services**

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The chapter provides information as a first step for individuals who are thriving to get a bird's eye view of the aspects underlying the optical networking in the context of 5G technology. Apart from capacity requirement challenges targeted by 5G coverage, it requires a lot of fibers to be successfully provisioned to achieve formidable performance goals of 5G such as diversified capacity requirements, availability, and coverage issues. The goals could be achieved by the underlying optical network with a greater number of interconnected fiber paths. In 5G, the requirements of reliable and ultra-low latency services required at the access side of a network shape up the research and evolution of underlying optical segments spanning from core to access part of the network. The reconfigurability and security issues of the present mode of optical communication need to be addressed, and the proposals given by the researchers are summed up. The chapter includes a general framework and theoretical concepts behind machine learning and software defined networking paradigms. © 2023 by IGI Global. All rights reserved.

## **Let's talk about Sex! AI and relational factors in the adoption of a chatbot conveying sexual and reproductive health information**

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This study addresses the adoption intention of ANA Chatbot, developed as part of the “Chup! Jom Sembang Seks” (translated as “Wait a minute! Let’s Talk about Sex”) campaign in Malaysia. ANA Chatbot provides youths with comprehensive sexual and reproductive health (SRH) information, empowering them in this vital aspect of their lives. Despite the emerging interest in chatbots conveying SRH information, research on the factors affecting the technology’s adoption remains scarce. This paper proposes an adoption model straddling AI attributes (perceived intelligence and anthropomorphism), relational elements (perceived risk and trust), and the UTAUT’s factors (performance expectancy, effort expectancy, social influence, and facilitating conditions). We empirically analyzed the model using Partial Least Squares Structural Equation Modelling based on 243 valid responses from participants engaging with ANA Chatbot. The results indicate that perceived intelligence positively relates to anthropomorphism, functional elements (performance expectancy and effort expectancy), trust, and SRH chatbot adoption intention. Anthropomorphism enhances performance expectancy but does not affect effort expectancy, trust, and SRH chatbot adoption intention. Performance expectancy, effort expectancy, facilitating conditions, and social influence are antecedents to ANA Chatbot adoption intention, thus affirming the UTAUT model. Contrary to predictions, perceived risk and trust do not influence the intention to adopt ANA Chatbot. Overall, this study contributes theoretical knowledge concerning AI-centric technology adoption models with a unique and novel focus on an SRH chatbot while providing pragmatic recommendations for promoting SRH chatbot adoption intention. © 2023 The Authors

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## **Intention to get the COVID-19 vaccine and religiosity: The moderating role of knowledge about the COVID-19 vaccine**

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N.; Alam M.M.; Suud M.M.;  
Khan S.

DOI: 10.2224/sbp.12531

Studying the influence of religiosity and knowledge of the COVID-19 vaccination is important for boosting countrywide vaccine acceptance in countries such as Pakistan. This study used partial least squares structural equation modeling to determine whether these factors predicted the intention to get the vaccine and whether knowledge about COVID-19 vaccines moderated the influence of religiosity on the intention to get vaccinated. Participants were 251 college students from Pakistan, recruited using convenience sampling, who completed a paper-based survey. Results of structural equation modeling showed that religiosity was negatively related to COVID-19 vaccine acceptance, knowledge about the vaccine was positively related to COVID-19 vaccine acceptance, and knowledge about the vaccine positively moderated the negative impact of religiosity on intention to get vaccinated. These findings suggest that challenging religious norms and increasing public awareness are crucial for COVID-19 vaccine adoption. © 2023 Scientific Journal Publishers Limited. All Rights Reserved.

## Malaysian Women's Viewpoint on HPV Screening and Vaccination: A Study on Barriers

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Cervical cancer is the second most common cancer in low-income countries and the third most common cancer in Malaysia among women aged 15 to 44. This is a huge concern because of the high mortality rate compared to other countries. Cervical cancer is caused by a common sexually transmitted human papillomavirus (HPV). Of cervical cancer cases, 80% are attributed to serotypes 16 and 18; therefore, early detection of premalignant lesions and infections from these viruses is important. Diagnosis can be carried out by polymerase chain reaction (PCR)-based HPV DNA analysis and Pap smear, which act as a viable preventive strategy. (1) Background: This study determined the adoption of the human papillomavirus (HPV) vaccine and the willingness to get vaccinated in Malaysian women. (2) Methods: An online survey was conducted with women from across Malaysia to gather their views on the barriers that prevent them from accessing HPV services. Sentiment analysis was performed to detect and classify the comments into three groups (positive, neutral, and negative). (3) Results: A total of 449 opinions were received, and the findings revealed that 41.3% were not afraid to be diagnosed early, and were prepared to accept positive or negative screening results. In addition, 18.6% of those surveyed indicated that they feared a Pap smear and were very concerned that they would not get good results. Of the respondents, 36% believed in vaccination and preferred to know more about it; 43.24% claimed that their family members were very supportive towards screening and vaccination; and 21.3% felt embarrassed and were afraid to undergo the screening procedure, as they had no prior experience and were unsure of how the procedure was conducted. In addition, 40.5% indicated that they had no concerns about HPV testing and related procedures, as this information is widely available. Only a few respondents (8.1%) talked about the time constraints and busy work schedules that prevented them from going to medical appointments. The survey also revealed that women are prevented from participating in cervical cancer screening and vaccination programs due to a lack of knowledge, shyness, personal rumors, privacy issues, financial issues, a lack of access to medical services, and ignorance and beliefs about rumors spreading online. (4) Conclusion: Results indicate that awareness of HPV and related prevention measures among women is vague and that negative perceptions continue to exist. It is strongly advised to develop a well-designed and knowledge-based application on the efficacy of screening and vaccination among Malaysian women. © 2023 by the authors.

## Microplastic contamination from surface waters and commercially valuable fishes of Karachi Coast, Pakistan

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Microplastic (MPs) pollution is a major concern due to extensive human plastic dependency that is deteriorating ecological health of the world's oceans. This study was conducted to observe MPs contamination in surface water samples and gastrointestinal tracts of 127 fishes attributed to 15 species from Karachi coast, the busiest port of Pakistan. Total of 6319 MPs/m<sup>3</sup> were recorded during this study from water samples where 73% MPs recorded from Manora channel (Karachi harbor) and 27% from open ocean. The most dominant MPs were fibers (42%), pellets (27%), and fragments (20%) respectively. MPs abundance differed significantly among species and ranged between  $20.833 \pm 2.522$ – $76.400 \pm 7.869$  item ind.<sup>-1</sup>. Fibers were the most dominant type in all samples (53.39–90.0 %) followed by pellets (4.88–20.22 %) and blue (21.60–66.23 %) was the most common color. The mean size of MPs ranged between 0.34 mm (*Otolithus ruber*) to 2.1 mm (*Terapon jarbua*). The mean highest number of MPs were recorded from shallow coastal fishes (440 item ind.<sup>-1</sup>) followed by estuarine and shallow coastal fishes (385 item ind.<sup>-1</sup>). MPs abundance differed significantly among species from different habitat type (Kruskal–Wallis Test,  $P < 0.0001$ ) with negative correlation between MPs abundance in GITs of fishes and their habitat (Spearman's rho,  $r = -0.143$ ) whereas MPs abundance was not significantly correlated with body weight ( $F = 0.002$ ,  $p = 0.963$ ), suggesting that MPs ingestion is independent of body weight. There is a need to work about origin, composition, interaction of MPs with biota and impacts of consuming fishes contaminated with high levels of MPs on human health. This is the preliminary study from the Karachi coast and will be a gateway for future studies in this area. © 2023 The Author(s)

## Minimization of High Maintenance Cost and Hazard Emissions Related to Aviation Engines: An Implementation of Functions Optimizations by Using Genetic Algorithm for Better Performance †

Khan N.; Abdi S.A.A.; Khan  
T.A.; Rizvi S.S.A.

This research paper explores the relationship between different functionalities of aircraft and investigates the impact of increased air travel on carbon dioxide, nitrous oxide, water vapor, and hydrocarbon emissions. These emissions contribute to both local airport pollution and global atmospheric pollution, posing significant environmental challenges. The study aims to minimize the high maintenance costs associated with aviation engines and to reduce the hazardous emissions from aircraft engines in order to protect the environment. A genetic algorithm is employed for multi-objective optimization, generating a set of desirable solutions applicable in real-world scenarios. The results demonstrate the effectiveness and simplicity of the genetic algorithm in iteratively searching for optimal solutions. This research provides valuable insights for the research community and paves the way for further investigations into these critical issues. © 2023 by the authors.

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## Internet of things-enabled smart controller for polymer dispersed liquid crystals films

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The evolvement of smart glass technology has gained a lot of interest through its energy-saving potential as one of the heating, ventilating, and air-conditioning (HVAC) system. This paper focuses on polymer dispersed liquid crystal (PDLC) film, a smart glazing film that changes its opacity in response to an electrical impulse. The power consumption of the smart film is considerably small. However, improper handling of the smart film such as not turning off the film after usage can lead to energy wastage. Hence, connecting the smart film to an internet of things (IoT) controller would be one of the possible solutions to ensure that the film is maintained properly. The objective of the work here is to develop a smart, low cost and efficient IoT-enabled smart controller for PDLC films with energy-saving features. In pursuance of materializing this concept, this paper delineates the design of a smart controller for the PDLC films. The implementation of the IoT features, NodeMCU, and environmental sensors enabled the smart film to be capable of switching automatically. In addition, voice-command features were also incorporated into the controller. With the successful development of the IoT smart controller, the PDLC films can operate autonomously and wirelessly. © 2023 Institute of Advanced Engineering and Science. All rights reserved.

## Investigation of peripheral natural killer cell activity in recurrent miscarriages of unknown cause

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Naveen P.; Ng K.-W.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85180187051&partnerID=40&md5=9890c3707828c5dea73b77d0cb11c07>

Aim: Recent studies on alloimmune factors have shown that Natural Killer (NK) cells may have a role in the implantation and maintenance of pregnancy. It is unclear precisely what kind of relationship exists between uterine and peripheral blood NK cells. Our study aims to investigate the relationship between pNK cells and recurrent pregnancy loss. Material and Methods: Among the patients who applied to the outpatient clinic at University Hospital, retrospectively, women with two or more pregnancy losses constituted the RM group, and women with two or more live births and no miscarriage formed the control group. Two or more miscarriages before 20 weeks of gestation were accepted as the criterion to consider a case of recurrent pregnancy loss. Results: To investigate the etiology of miscarriage in RM patients, parameters associated with the cytotoxicity of pNK cells in women with RM and control fertile women were evaluated. Although the median pNK activity level was relatively higher in the recurrent low group compared to the control group, there was no significant difference between the groups in our study ( $p=0.448$ ). Discussion: The present study found no significant difference in the percentages of CD56+dim and CD56+bright pNK cells between the patient group with unexplained RM and the healthy fertile control group. There was also no significant difference in CD8 and CD158a expressions in pNK cells between the patient group with unexplained RM and the healthy fertile control group. © 2023 Elham Abdulwahab Anaam, et al.

## Mobile Application for After School Pickup Solution: Malaysia Perspectives

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School pickup is a daily routine for most parents during the school term. The use of private vehicles as daily commute to transport students to and from schools has caused school-related traffic congestion and air pollution problems. The after school waiting bay of most schools in urban areas is normally very crowded with students waiting for transport to travel home. Teachers on duty and school student council members are assigned to monitor and control the crowded situation. Some schools implement drive-thru pickup procedure in which the teacher on duty need to be very attentive and observe the cars approaching the bay for pickup in order to queue up the students at the pickup bay. With the outbreak of pandemic COVID-19, the teachers not only need to observe the vehicles heading to the pickup bay but to ensure the students obey social distancing norms. To alleviate after school pickup related problems, a mobile application for after school pickup is proposed. With this application, the school teachers would be able to obtain a list of pickup requests from the parents via the mobile application and queue up the students accordingly with safe social distancing at the pickup bay. This can ease the crowded situation, minimize parents' waiting time at the pickup lane, and reduce air pollution problem caused by vehicle engines that are running while waiting at the pickup lane. © 2023, The Author(s), under exclusive license to Springer Nature Switzerland AG.

## Modeling and Analysis of Electrical Circuit Connections in the Piezoelectric Cantilever Array for Vibration Energy Harvester

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57605.2023.10194651

The use of energy-efficient and environmentally-friendly low-power sensors technologies has impacted the advancement of vibration energy harvesting systems. The standard piezoelectric cantilever beam has numerous limitations, such as a limited operating range and decreased output power due to mismatch of operating frequency and its surrounding frequencies. A broadband approach to energy harvesting is crucial for capturing electrical energy from random ambient vibrations. In this study, a model of the piezoelectric energy harvesters is established to assess the effectiveness of a multi-cantilever system. This research explores the impact of two distinct electrical connection configurations for the cantilevers, specifically series and parallel circuit arrangements, on boosting the power output and expanding the bandwidth. An array consisting of four similar piezoelectric cantilevers with different resonant frequencies were positioned alongside each other to function as a system for producing electrical output across a frequency range between 100Hz to 400Hz. The bandwidth of the multi-cantilever system was effectively expanded from 100Hz to 200 Hz for a 4-beam system, which is twice its original single cantilever output for both the series and parallel configurations. The peak output voltage of the system is also notably higher, at least a two-fold increase over the individual cantilever beams. © 2023 IEEE.



## **Modelling and Evaluation of Driving Simulator for Driving Education in Malaysia**

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Driving simulator has been widely used as one of driver training tools because it provides a safe environment which does not expose drivers to hazards. However, Malaysia has yet to adopt the driving simulator in the driving course. In this paper, a cost effective and modular driving simulator prototype integrated is designed and developed based on the Malaysian Ministry of Transport's Standardised License Test. Seven modules which correspond to five practical syllabus circuit tracks and two on-the-road theories are created using a real time development tool named "Unity" and integrated with some off-the-shelf hardware namely a steering wheel, gear shifter and pedals. The justification of the simulator is confirmed by conducting a unique experimental procedure on it participated by 26 individuals. They are divided into two groups each of which follows two different training methodology before taking part in the simulator test mode. One group is provided with only printed materials and another group is allowed to practise in the simulator. Experimental results show that the transfer of skills is far better among the participants of the group who are allowed to practise the simulator before taking part in the automated test of the simulator. © 2023, Success Culture Press. All rights reserved.

## **Modelling labour productivity and the role of research intensity in 129 years: evidence from a new dynamic instrumental variable estimation approach**

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DOI: 10.1007/s11135-023-01766-w

One of the areas of empirical research that has remained largely underexplored is the role of research intensity on labour productivity. To bridge this gap, this study investigates the impact of research intensity on labour productivity in 15 OECD countries using a new dynamic instrumental variable estimation approach while providing for financial development and education level as additional control variables for the 1890–2018 period. The results reveal that in most cases, research intensity, financial development, and level of education have positive impacts on labour productivity. In the model containing all the control variables and dummies, it is observed that for every 1 percentage point increase in research intensity, the labour productivity grows by 0.614 points. The results of the dummies suggest mixed evidence for the impact of World War I on labour productivity. The results further suggest that both World War II and the oil price crisis of the 1970s led to positive changes in labour productivity. For the purpose of robustness, we have also used a new Poisson pseudo maximum likelihood estimation approach to estimate the impact of research intensity on labour productivity, but the results are not materially different. The policy implications of the empirical results are detailed in the paper. © 2023, The Author(s), under exclusive licence to Springer Nature B.V.

## **Multi-Configuration Analysis of DenseNet Architecture for Whole Slide Image Scoring of ER-IHC**

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6848

Nuclei classification is a mandatory process to obtain scoring information for whole slide images (WSIs). In immunohistochemistry (IHC) staining specifically for estrogen receptor (ER) biomarker, an Allred score based on the proportion and intensity of cancer nuclear staining is widely used in histopathology practice to predict response to hormonal treatment. This manually exhaustive process can be accelerated with the help of computational intelligence. In this article, we present a thorough analysis of 37 WSIs of breast cancer cases with over 2.8 million segmented nuclei. ER-stained nuclei were classified into negative, weak, moderate and strong intensities using DenseNet deep learning architecture, contributing to Allred scoring. Seven different models and configurations were exhaustively analysed in six tests to obtain the scoring reaching the best concordance of 56.8% and 81.1% with the pathologist's manual score and suggested hormonal treatment. We also discussed in detail the causes that lead to the non-concordances. This study follows the pathologists' workflow in obtaining the Allred score but is fully automated. It provides a basis for the development of more complex deep learning models, particularly for nuclei classification and achieving accurate scoring of ER-IHC stained WSIs. © 2013 IEEE.

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## **New RFI Model for Behavioral Audience Segmentation in Wi-Fi Advertising System**

Lim S.-T.; Ong L.-Y.; Leow  
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DOI: 10.3390/fi15110351

In this technological era, businesses tend to place advertisements via the medium of Wi-Fi advertising to expose their brands and products to the public. Wi-Fi advertising offers a platform for businesses to leverage their marketing strategies to achieve desired goals, provided they have a thorough understanding of their audience's behaviors. This paper aims to formulate a new RFI (recency, frequency, and interest) model that is able to analyze the behavior of the audience towards the advertisement. The audience's interest is measured based on the relationship between their total view duration on an advertisement and its corresponding overall click received. With the help of a clustering algorithm to perform the dynamic segmentation, the patterns of the audience behaviors are then being interpreted by segmenting the audience based on their engagement behaviors. In the experiments, two different Wi-Fi advertising attributes are tested to prove the new RFI model is applicable to effectively interpret the audience engagement behaviors with the proposed dynamic characteristics range table. The weak and strongly engaged behavioral characteristics of the segmented behavioral patterns of the audience, such as in a one-time audience, are interpreted successfully with the dynamic-characteristics range table. © 2023 by the authors.

## **Nexus among blockchain visibility, supply chain integration and supply chain performance in the digital transformation era**

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2021-0784

**Purpose:** Digital transformation (DT) in the semiconductor industry goes beyond traditional business operations and supply chain management (OSCM) to the digital world. Despite significant developments in recent years, blockchain implementations for OSCM remain relatively underdeveloped in the semiconductor industry. Therefore, this research aims to examine the relationships between blockchain visibility, supply chain integration (SCI) and supply chain performance (SCP) in the era of DT in Malaysia's semiconductor industry to shed light on this emerging area. **Design/methodology/approach:** A convenience sampling of 71 operations and supply chain managers attached to semiconductor manufacturing firms in Malaysia were invited to participate in a survey. In assessing blockchain visibility within the industry, key terms namely business intelligence gathering, information exchange, information technology (IT) and knowledge of asset status, were conceptualised from the literature review. The questionnaires developed to collect data were validated by industry and academic experts. **Findings:** The results from the analysis confirmed that SCI mediates the link between blockchain visibility (information exchange, business intelligence gathering and knowledge asset status) and SCP. Likewise, the importance-performance matrix analysis (IPMA) outcomes revealed that IT played a minor role. The results suggested that semiconductor manufacturers should pay less attention to IT since this was identified as having the least priority towards improvement. **Practical implications:** The outcomes from this research enable policymakers to strategise and integrate blockchain technology in the era of DT to ensure sustainable SCM in the semiconductor industry in Malaysia. **Originality/value:** The research bridge the knowledge gap by revealing the value that blockchain visibility can facilitate SCP and explore SCI as the prevailing factor and demonstrates how Resource-Based Theory and Network Theory can be applied in this study. © 2022, Emerald Publishing Limited.

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## **Nuclei Detection in HER2-SISH Histopathology Images**

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Fauzi M.F.; Munirah Wan  
Ahmad W.S.H.; Leng  
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0352624

Automatic quantification of cell nuclei in silver-enhanced in situ hybridization (SISH) images can be of great help to pathologists to examine HER2 status based on HER2 and CEN17 biomarkers. This paper proposed an image processing-based method for nuclei detection in HER2-SISH images. We first extracted sections of the foreground image using a combination of local thresholding, morphological filtering, and expanding regions based on intensity. Then the marker-controlled watershed is applied for separating the clustered nuclei in the foreground regions. A set of nuclei marked by our collaborating pathologists on SISH-stained breast cancer images are used to measure the effectiveness of the proposed approach. HER2-SISH histo-scoring is highly dependent on the accurately identified nuclei, hence the importance of the proposed detection method. Experimental results shows very promising detection performance, with high concordance against the pathologists' marking. © 2023 IEEE.

## On the Potential of Solar Energy for Chemical and Metal Manufacturing Plants in Malaysia

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10.18517/ijaseit.13.5.19052

The manufacturing sector constitutes a cornerstone of Malaysia's economic landscape, significantly contributing to the nation's Gross Domestic Product (GDP). This pivotal role, however, is accompanied by substantial energy requirements, placing the manufacturing sector among the highest energy consumers across various industries in the country. This study primarily focuses on assessing the solar energy potential within the manufacturing sector. The objectives encompass two key facets: firstly, simulating the attainable energy yield from a photovoltaic (PV) system integrated into manufacturing industry facilities, and secondly, evaluating whether the PV system's generated electricity aligns with the energy requirements of selected manufacturing sectors, namely chemical and metal manufacturing plants. Sixteen companies have been selected from the chemical and metallurgical sectors for this study. The design process for the solar photovoltaic systems within these facilities necessitates determining the factory's location and rooftop area. Additionally, assessing the total savings is imperative to gauge the viability of the solar energy generated by these manufacturing plants. Among the 16 companies analyzed, intriguingly, 5 companies have demonstrated the capacity to fully transition to solar energy to cater to their energy needs. Notably, one of these companies can harness solar power to meet an impressive 179.91% of their energy demand by optimizing available space for solar power generation. This transition could potentially translate into substantial savings exceeding RM1 million in electricity costs. © IJASEIT is licensed under a Creative Commons Attribution-Share Alike 4.0 International License.

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## Modeling Positive Electronic Word of Mouth and Purchase Intention Using Theory of Consumption Value

Aravindan K.L.; Ramayah T.; Thavanethen M.; Raman M.; Ilhavenil N.; Annamalah S.; Choong Y.V.

DOI: 10.3390/su15043009

Green is a timely and crucial concept in sustainability; therefore, encouraging both public and private businesses in Malaysia to persistently promote and make attempts to put green practices into effect is similarly crucial. The green industry and its environment are under pressure as a result of its acquisition, which is still occurring at an alarming rate. Using the theory of consumption values (TCV) as the underlying theory, this study explores the potential drivers of green purchases while also analyzing the mediation effect of positive word-of-mouth. Purposive sampling was employed in this study and data analysis was conducted using covariance-based structural equation modeling (SEM-AMOS). Findings from 336 respondents highlight the significance of positive word-of-mouth, emotional value, and epistemic value, as major determinants of green purchase intention. This study offers crucial information that will aid suppliers of green goods in motivating customers to make green purchases by emphasizing high-impact product values. Additionally, the study advocates the promotion of sustainable practices by emphasizing positive word-of-mouth in sparking public interest to make green purchases. © 2023 by the authors.

## Optimization of MLVA loci combination using metaheuristic methods

Ng G.Y.L.; Ang K.L.; Tan S.C.; Ong C.S.; Ngeow Y.F.

DOI: 10.3233/JIFS-231367

Multilocus variable number tandem repeat analysis (MLVA) utilizes short DNA repeat polymorphism in genomes, which is termed variable number tandem repeat (VNTR), to differentiate closely related organisms. One research challenge is to find an optimal set of VNTR to distinguish different members accurately. An intuitive method is to use an exhaustive search method. However, this method is not an efficient way to find optimal solutions from a dataset comprising many attributes (loci) due to the curse of dimensionality. In this study, metaheuristic methods are proposed to find an optimal set of loci combination. Basic genetic algorithm (BGA) and modified genetic algorithm (MGA) were proposed in our previous work for this purpose. However, they require prior knowledge from an experienced user to specify the minimum number of loci for achieving good results. To impose no such expertise requirement for parameter setting, a GA with Duplicates (GAD), which allows the inclusion of duplicated loci in a chromosome (potential solution) during the search process, is developed. The study also investigates the search performance of a hybrid metaheuristic method, namely quantum-inspired differential evolution (QDE). Hunter-Gaston Discriminatory Index (HGDI) is used to indicate the discriminatory power of a loci combination. Two *Mycobacterium tuberculosis* MLVA datasets obtained from a public portal and a local laboratory respectively, are used. The results obtained by using exhaustive search and metaheuristic methods are first compared, followed by a performance comparison among BGA, MGA, GAD, and QDE by a statistical approach. The best-performing GA method (i.e., GAD) and QDE are selected for a performance comparison with several recent metaheuristic methods using both MLVA datasets by a statistical approach. The statistical results show that both GAD and QDE could achieve higher HGDI than the recent methods using a small but informative set of loci combination. © 2023 - IOS Press. All rights reserved.

## Modeling of Copper Zinc Tin Sulfide Solar Cells with Various Buffers Using SCAPS-1D

Zhang H.; Chan K.-Y.; Ng Z.-N.

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Recently, researchers have shown a strong interest in research on quaternary semiconductor copper zinc tin sulfide (CZTS) photovoltaic cells. These cells have a high absorption coefficient, a direct bandgap, and excellent electrical properties. However, the toxicity of cadmium (Cd) in the cadmium sulfide (CdS) buffer layer in standard CZTS solar cells, can generate severe environmental contamination that is hazardous to humans. As a result, building a Cd-free CZTS solar cell is critical. Meanwhile, given that the peak power conversion efficiency of CZTS solar cells stands at a modest 11%, this study is dedicated to identifying an optimal approach for replacing the environmentally hazardous CdS layers to enhance overall efficiency. SCAPS-1D is a one-dimensional solar cell simulation program commonly used to examine proposed solar cells without building them. This study highlights the performance of CZTS with various nontoxic buffer layers, as well as the key results obtained through numerical research with SCAPS-1D. © 2023 Wiley-VCH GmbH.

## Optimizing Energy Harvesting: A Gain-Scheduled Braking System for Electric Vehicles with Enhanced State of Charge and Efficiency

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Radzi M.A.M.; As'array A.

DOI: 10.3390/en16124561

Recycling braking energy is crucial in increasing the overall energy efficiency of an electric vehicle. Regenerative braking system (RBS) technology makes a significant contribution, but it is quite challenging to design an optimal braking force distribution while ensuring vehicle stability and battery health. In this study, a parallel-distribution braking system that transfers as much energy as possible from the wheel to the battery was investigated. An integrated braking force distribution with gain-scheduling super-twisting sliding mode control (GSTSMC) was proposed to capture the maximum kinetic energy during braking and convert it into electrical energy. Parallel friction and regenerative braking ratios dominate the design of the braking component, which is based on the speed of the vehicle. A GSTSMC was implemented and incorporated into the vehicle dynamics model developed in the ADVISOR environment. Simulation was utilized to rigorously validate the efficacy of the proposed control strategy, ensuring its potential to perform optimally in practical applications. Consideration was given to the vehicle's slip ratio on dry asphalt to maintain vehicle stability. Simulation results were used to validate the performance of the proposed design in terms of the state of charge (SOC), transmitted energy, motor efficiency, battery temperature, and slip ratio. Based on the results, the proposed control strategy is capable of increasing the SOC value to 54%, overall efficiency to 25.98%, energy transmitted to 14.27%, and energy loss to 87 kJ while considering the vehicle's speed-tracking ability, battery temperature, and stability. © 2023 by the authors.

## Perceptions on Climate Change Challenge Among Hoteliers and Travel Agencies in Malaysia

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S.-B.

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23844-4\_27

Tourism is a climate-dependent industry, and many tourism industry players owe their popularity destinations to their pleasant climates during holiday seasons. This study explores the knowledge of the Malaysian hoteliers and travel agencies on the impact of climate change risks. The purpose of the study is to gain an understanding of the perceptions and preparedness of hoteliers and travel agencies in resilience to climate change challenges. The study employs a mixed of close- and open-ended questionnaire survey directed to managers in the hotel industry and travel agencies in Malaysia. The findings show that the selected 100 hoteliers and travel agencies have high awareness of global warming and are willing to take climate actions. Majority of the respondents are willing to work together with local and international projects by offering eco-friendly activities to mitigate climate change. Nevertheless, the respondents are slightly optimistic of the tourism industry under the climate change risks and perceived that the hotels are somewhat ready for the climate crisis. The need of an immediate action to raise awareness of climate change risk and to implement climate change action are recommended to secure the future tourism industry. © 2023, The Author(s), under exclusive license to Springer Nature Switzerland AG.

## **P2P Lending platforms in Malaysia: the awareness among Malaysian adults**

Nguyen L.T.P.; Muthaiyah S.; Sy M.O.; Kalabeke W.

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Background: Since 2016, the Securities Commission (SC) in Malaysia has given licenses to only eleven P2P lending platforms. Such lending platforms are expected to disrupt the lending services of traditional lenders in the coming years. However, being still in their infant stages, it is essential to know the extent to which such platforms are made known to potential investors out there. This study aims to examine the awareness level of the eleven P2P lending platforms among Malaysian adults. The study also explores if past investment experience and financial knowledge would influence such awareness from Malaysian adults. Methods: A sample of 335 Malaysian individuals was used for this study. An online questionnaire was designed with three main parts: demographic, financial literacy, and P2P lending awareness. Using IBM SPSS Statistics 26, frequency, descriptive, normality, Pearson coefficients and multiple regression analyses were carried out. Results: Although seven out of ten respondents have good knowledge in three areas of finance: compounding rate, inflation and diversification, only 14.33% had a good and excellent awareness level of P2P lending. Thus, one would expect lesser awareness about P2P lending among Malaysian adults whose financial literacy is poor or zero. Test results from multiple regression analysis suggest that past lending experiences positively affect the awareness of P2P lending in Malaysia, but not the financial literacy. Conclusions: The awareness about P2P lending among Malaysian adults is too low, despite their high level of education and financial literacy. No investing experience and not knowing any existing P2P lending in the country may be the reason for this low awareness. Therefore, for P2P lending to thrive in Malaysia, the eleven P2P lending platforms need to be promoted aggressively in various social media outlets. Copyright: © 2023 Nguyen LTP et al.

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## **PERMA well-being and innovative work behaviour : A systematic literature review**

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DOI:  
10.12688/f1000research.141629.1

Background: The purpose of this research is to examine at how the literature measures the relationship between PERMA (positive emotion, engagement, relationships, meaning, and accomplishments) well-being and innovative work behaviour (IWB). Methods: This systematic literature review examines peer-reviewed English research papers published in 2012 that investigate the relationship between PERMA well-being and IWB. A total of 37 publications were discovered in 32 journals. Results: A total of 220 articles were initially retrieved from the database. 37 studies out of 220 satisfied the inclusion criteria and were thoroughly examined. Our findings present a comprehensive overview of the types of PERMA well-being related to IWB in different countries and industries. Literature-based research approaches are also discussed. Research methods from the previous literature are also discussed. Conclusions: This study is one of the first to conduct a systematic literature review (PRISMA) method on the relationship between PERMA well-being and IWB. This review suggests constructive future research directions. Copyright: © 2023 Ibrahim NF et al.

## **P2P lending platforms in Malaysia: What do we know?**

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DOI:  
10.12688/f1000research.734  
10.3

**Background** - With the recent evolution of Financial Technology (FinTech), 11 peers to peer (P2P) lending platforms have been regulated by the Securities Commission in Malaysia since 2016. P2P lending platforms offer new investment opportunities to individual investors to earn higher rates on return than what traditional lenders usually provide. However, individual investors may face higher potential risks of default from their borrowers. Therefore, individual investors need to understand the potential exposure to such P2P lending platforms to make an effective investment decision. This study aims to explore the potential risk exposures that individual investors may experience at Malaysia's licensed P2P lending platforms. **Methods** - Based on data collected manually from nine P2P lending platforms over five months, relationships between interest rates and various risk classifying factors such as credit rating, industry, business stage, loan purpose, and loan duration are examined. **Results**- This study shows that loans with a similar credit rating and with or without similar loan purpose; and a business stage may offer investors significantly different interest rates. In addition, loans with shorter durations may provide investors with higher interest rates than those with longer durations. Finally, loans issued by companies from the same industry appeared to be charged with similar interest. These findings are valuable to investors to prepare themselves before making their investments at the P2P lending platforms. **Conclusion**- With first hand-collected data, this study provides an original insight into Malaysia's current P2P lending platforms. Findings obtained for relationships between interest rates and risk classifying factors such as credit rating, industry, business stage, loan purpose and loan duration are valuable to investors of Malaysian P2P lending platforms. Copyright: © 2023 Nguyen LTP et al.

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## **The Influence of External Stakeholders on Environmental, Social, and Governance (ESG) Reporting: Toward a Conceptual Framework for ESG Disclosure**

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2597.2023.2.9.20

In recent years, governments and investors globally are compelling major corporate organizations to disclose important environmental, social and governance (ESG) issues. The continued flatlining of ESG reporting quality has led some parties to call on policy-makers to take advantage of the distinct contextual pressure from external stakeholders to improve corporate ESG commitments. However, the relationship between external stakeholders and ESG disclosure remains ambiguous, both theoretically and empirically. Grounded in stakeholder theory, legitimacy theory, resource-based theory, and slack resource theory, this article reconceptualizes Ullmann's 1985 model of corporate social performance to present a novel conceptual framework to examine the external stakeholders-ESG disclosure relationship. This article contributes to the literature by illustrating the mediating effect of the strategic posture and the moderating effect of corporate financial performance on corporate ESG disclosure perpetuated by powerful stakeholders. © 2023 by the authors.



## **Path Difference Optimization of 5G Millimeter Wave Communication Networks in Malaysia**

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10.3390/app131910889

The development of intelligent transport systems, mobile cellular networks, microwave links, and vehicle communications has accelerated with the use of wireless connections as a communication channel in 5G wireless technology. Weather, including rain, fog, snow, sand, and dust, impacts wireless communication channels in various ways. These effects are more pronounced at the high frequencies of millimeter-wave bands. Recently, the 5G network has made it possible to support a variety of applications with fast speeds and high-quality content. To facilitate the use of high-millimeter-wave frequencies, a recent study investigated how sand and dust affect the 5G communication channel. In this paper, we consider the impact of frequent and heavy rainfall on millimeter-wave propagation and cross-polarization of the wave at various points along the propagation path caused by rainfall in urban and highway scenarios in Malaysia. We estimate rainfall attenuation, path loss, and link margin at various millimeter-wave frequencies. From our simulation results, it is evident that rainfall attenuation, path loss, and link margin depend on the operating frequency, path difference, and rainfall rate. In this paper, we estimate and compare the optimal path difference values under urban and highway scenarios both with and without rainfall attenuation. © 2023 by the authors.

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## **Perspectives of employers on graduate employability skills: A case of Malaysia**

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Choy C.S.; Nee T.W.; Ming-  
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DOI:  
10.55493/5008.v11i4.4946

One of the main reasons for the low employment rate of Malaysian graduates is a lack of skills. A substantial number of employers have expressed dissatisfaction with the quality of graduates, claiming that they lack the necessary skills required for successful employment. This research aims to investigate the perceptions of employers on the importance and level of satisfaction with the employability skills of graduates and subsequently examine the gap between them (level of importance and satisfaction). The survey included 63 employers from the manufacturing industry, and the data were analyzed. The results suggest that employers viewed all eight skills, such as English communication skills, thinking skills, positive attitude and teamwork, work planning skills, work discipline, self-motivation, and technology skills, as essential employability skills. However, the gap analysis reveals that they were dissatisfied with the skills possessed by the graduates, indicating that the skills of the graduates fell short of their expectations, which is consistent with their dissatisfaction. The highest differences between satisfaction and expectation arise from English communication skills and thinking skills, followed by self-motivation, a positive attitude, teamwork, work planning skills, technology skills, and work discipline skills. This study provides important insights for graduates, higher education institutions, and policymakers in Malaysia, as well as in countries facing the issue of the low employability of graduates. © 2023 EManuscript Technologies. All rights reserved.

## **Polymer-enhanced perovskite oxide-based photocatalysts: a review**

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Marlinda A.R.; Yap B.K.

DOI: 10.1039/d3nr03874b

Oxide perovskites (OPs) have emerged as promising photocatalysts for numerous applications, such as energy conversion, renewable fuels, and environmental remediation. Although OPs are gaining traction, their efficacies are still hindered by low charge carrier mobility and poor stability. This study investigated the function of polymers actively participating in OP structures to improve the overall characteristics. An overview of the polymer-enhanced perovskite oxide photocatalyst (PEPOP) field was effectively reviewed. These PEPOPs were demonstrated in photovoltaics, pollutant degradation, and gas conversion and reduction. Nonetheless, additional research is needed to explore the potential of PEPOPs to establish their efficacy in photocatalytic applications. The technological improvements of PEPOPs were hindered by significant challenges related to stability and sensitivity. The urgency of this review was apparent due to the fast-paced nature of research in the field of photocatalysis. Recent breakthroughs and emerging applications highlight the need for a comprehensive overview of PEPOPs and their enhanced catalytic capabilities. Consequently, a broad outlook was provided for the current state of PEPOP-related studies, highlighting the potential of these materials for future applications. © 2023 The Royal Society of Chemistry.

## **Pre-trained DenseNet-121 with Multilayer Perceptron for Acoustic Event Classification**

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<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85149661080&partnerID=40&md5=a396a110c62a84a35eb0b8325c73afaf>

Acoustic event classification aims to classify the acoustic event into the correct classes, which is beneficial in surveillance, multimedia information retrieval, and smart cities. The main challenges of acoustic event classification are insufficient data to learn a good model and varying lengths of the acoustic input signal. In this paper, a deep learning architecture, namely: Pre-trained DenseNet-121 with Multilayer Perceptron is proposed in this work to classify the acoustic events into correct classes. To mitigate the data scarcity problem, two data augmentation techniques: time stretching and pitch shifting, are applied on training data to boost the number of training samples. Given the augmented acoustic signal, a frequency spectrogram technique is then employed to represent the acoustic event signal into a fixed-size image representation. The output of the spectrogram images are enriched with the information of the acoustic signal such as energy levels over time domain, frequency changes, signal strength, and amplitude. Subsequently, a pre-trained DenseNet-121 model is adopted as a transfer learning technique to extract significant features from the spectrogram image. In doing so, computation resources can be greatly reduced and improve the performance of the deep learning-based model. Three benchmark datasets: (1) Soundscapes1, (2) Soundscapes2, and (3) UrbanSound8K, are used to assess the performance of the proposed method. From the experimental results, the proposed Pre-trained DenseNet-121 with Multilayer Perceptron outperforms existing works on Soundscapes1, Soundscapes2, and UrbanSound8K datasets with the F1-scores of 80.7%, 87.3%, and 69.6%, respectively © 2023, IAENG International Journal of Computer Science. All Rights Reserved.

## Performance Analysis of Chronic Kidney Disease Detection Based on K-Nearest Neighbors Data Mining

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<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85165910266&partnerID=40&md5=a3a331ace472878723710cda23966b47>

Kidney diseases are a leading cause of death in the United States. According to the Centers for Disease Control and Prevention (CDC), in 2021, approximately 37 million US adults, or 1 in 7, are estimated to have chronic kidney disease (CKD), and most are undiagnosed. Moreover, Medicare costs for people with CKD were \$87.2 billion in 2019. Thus, data mining has been used in the healthcare industry to assist authorities in providing patients with health information as well as identifying patients earlier. In this paper, data mining is implemented for the classification of laboratory data from CKD patients. The K-Nearest Neighbors (KNN) algorithm is proposed to train the machine learning model to detect CKD based on blood test lab results such as sugar count, white blood cell count, red blood cell count, hemoglobin, albumin, etc. The model also includes general factors such as age and blood pressure. From the obtained results, other machine learning methods produce inferior accuracy, such as linear regression and decision tree. By training the model on a dataset containing 400 different anonymous patients using KNN, the accuracy reaches 99%. Based on the prediction, around 40% of the patients are fully healthy. This paper aims to detect whether the patient has CKD or not, depending on lab results and general information about the patient. © 2023, Ismail Saritas. All rights reserved.

## Portfolio Construction of Good Defensive Malaysian Shariah-Compliant Stocks Using Data Mining Techniques

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DOI:  
10.33168/JSMS.2023.0517

Investors, particularly Muslims who constitute a significant portion of Malaysia's population, seek Shariah-compliant stocks that provide stable returns and exhibit defensive behaviour during economic downturns. However, the analysis of these stocks can be challenging due to the large number of Shariah-compliant stocks listed on Bursa Malaysia. This could lead to investors refraining from investing in these stocks due to a lack of financial knowledge and time. To address this issue, this study proposes a practical approach that employs data mining techniques to aid stock portfolio construction. The approach uses the Beta coefficient to identify less volatile Shariah-compliant stocks on Bursa Malaysia from 2018-2021. The study then utilises k-Means clustering to group stocks with similar financial characteristics and selects well-performing clusters based on their financial performance. The researchers then form equal-weighted portfolios using the stocks frequently selected as members of the well-performing clusters and evaluate their performance by comparing their returns with various sectors' price indexes. The results show that most stock portfolios outperformed the indexes. The study highlights the importance of data mining techniques in identifying good Shariah-compliant stocks and forming portfolios. Furthermore, the study provides a practical solution to investors looking to invest in Malaysian Shariah-compliant stocks. © 2023, Success Culture Press. All rights reserved.

## Prediction of Gender-Biased Perceptions of Learners and Teachers Using Machine Learning

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Computers have enabled diverse and precise data processing and analysis for decades. Researchers of humanities and social sciences are increasingly adopting computational tools such as artificial intelligence (AI) and machine learning (ML) to analyse human behaviour in society by identifying patterns within data. In this regard, this paper presents the modelling of teachers and students' perceptions regarding gender bias in text books through AI. The data was collected from 470 respondents through a questionnaire using five different themes. The data was analysed with support vector machines (SVM), decision trees (DT), random forest (RF) and artificial neural networks (ANN). The experimental results show that the prediction of perceptions regarding gender varies according to the theme and leads to the different performances of the AI techniques. However, it is observed that when data from all the themes are combined, the best results are obtained. The experimental results show that ANN, on average, demonstrates the best performance by achieving an accuracy of 87.2%, followed by RF and SVM, which demonstrate an accuracy of 84% and 80%, respectively. This paper is significant in modelling human behaviour in society through AI, which is a significant contribution to the field. © 2023 by the authors.

## Predictive Churn Modeling for Sustainable Business in the Telecommunication Industry: Optimized Weighted Ensemble Machine Learning

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DOI: 10.3390/su15118631

Customers are prominent resources in every business for its sustainability. Therefore, predicting customer churn is significant for reducing churn, particularly in the high-churn-rate telecommunications business. To identify customers at risk of churning, tactical marketing actions can be strategized to raise the likelihood of the churn-probable customers remaining as customers. This might provide a corporation with significant savings. Hence, in this work, a churn prediction system is developed to assist telecommunication operators in detecting potential churn customers. In the proposed framework, the input data quality is improved through the processes of exploratory data analysis and data preprocessing for identifying data errors and comprehending data patterns. Then, feature engineering and data sampling processes are performed to transform the captured data into an appropriate form for classification and imbalanced data handling. An optimized ensemble learning model is proposed for classification in this framework. Unlike other ensemble models, the proposed classification model is an optimized weighted soft voting ensemble with a sequence of weights applied to weigh the prediction of each base learner with the hypothesis that specific base learners in the ensemble have more skill than others. In this optimization, Powell's optimization algorithm is applied to optimize the ensemble weights of influence according to the base learners' importance. The efficiency of the proposed optimally weighted ensemble learning model is evaluated in a real-world database. The empirical results show that the proposed customer churn prediction system achieves a promising performance with an accuracy score of 84% and an F1 score of 83.42%. Existing customer churn prediction systems are studied. We achieved a higher prediction accuracy than the other systems, including machine learning and deep learning models. © 2023 by the authors.

## Performances of Polymer-Dispersed Liquid Crystal Films for Smart Glass Applications

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DOI:  
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Polymer-dispersed liquid crystal (PDLC) film is an active smart film penetrating the market due to its unique functionalities. These functional characteristics include switchable tint capabilities, which shield building residents from the sun's harmful ultraviolet (UV) rays, improve energy-saving features, and produce higher cost-efficiency. Although PDLC films are promising in several applications, there is still ambiguity on the performance of PDLC films. Particularly, the 'sizing effects' (such as film thickness and area) correlation with visible light transmission (VLT), ultraviolet rejection (UVR), infrared rejection (IRR), light intensity, current consumption, and apparent power consumption is not well understood. Therefore, this study investigated the sizing effects of PDLC films, including the thickness effect on VLT, UVR, IRR, light intensity, and area influence on current and apparent power consumptions. The varying applied voltage effect on the light transmittance of the PDLC film was also effectively demonstrated. A 0.1 mm PDLC film was successfully presented as a cost-efficient film with optimal parameters. Consequently, this study paves the way for a clearer understanding of PDLC films (behavior and sizing effects) in implementing economic PDLC films for large-scale adoption in commercial and residential premises. © 2023 by the authors.

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## Processing Plant Diseases Using Transformer Model

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DOI: 10.30630/joiv.7.4.2291

Agriculture faces challenges in achieving high-yield production while minimizing the use of chemicals. The excessive use of chemicals in agriculture poses many problems. Accurate disease diagnosis is crucial for effective plant disease detection and treatment. Automatic identification of plant diseases using computer vision techniques offers new and efficient approaches compared to traditional methods. Transformers, a type of deep learning model, have shown great promise in computer vision, but as the technology is still new, many vision transformer models struggle to identify diseases by examining the entire leaf. This paper aims to utilize the vision transformer model in analyzing and identifying common diseases that hinder the growth and development of plants through the plant leaf images. Besides, it aims to improve the model's stability by focusing more on the entire leaf than individual parts and generalizing better results on leaves not in the image center. Added features such as Shift Patch Tokenization, Locality Self Attention, and Positional Encoding help focus on the whole leaf. The final test accuracy obtained is 89.58%, with relatively slight variances in precision, accuracy, and F1 score across classes, as well as satisfactory model robustness towards changes in leaf orientation and position within the image. The model's effectiveness shows the vision transformer's potential for automated plant disease diagnosis, which can help farmers take timely measures to prevent losses and ensure food security. © 2023, Politeknik Negeri Padang. All rights reserved.

## **Progressing Sustainable Development through Social Entrepreneurship: Modelling Intentional Predictors for Bangladesh Using the Value–Belief–Norm Model**

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DOI: 10.3390/su151712971

Considering the diverse social and environmental issues globally, social entrepreneurship could be the most relevant solution to address social issues by employing a sustainable economic model, particularly for developing nations with limited government support. Hence, we examined social entrepreneurship intention among working adults in Bangladesh using an extended version of the value–belief–norm model. We used a cross-sectional design to arrange an online questionnaire and collect quantitative data from 187 respondents. SEM-PLS was used for analysis. Findings revealed a significant positive effect of openness to change, self-enhancement, and self-transcendence on problem awareness. Problem awareness was found to significantly affect outcome efficacy and social entrepreneurship intention. Finally, personal norms showed significant positive effects on social entrepreneurship intention. The mediating role of problem awareness and personal norms was further confirmed. Apart from extending the lens of VBN and enriching the current literature, insights from this study could assist policymakers, social organizations, and social entrepreneurs in formulating relevant policies and sustaining social ventures. © 2023 by the authors.

## **Proposed CtCNet-HDRNN: A Cornerstone in the Integration of 5G mmWave and DSRC for High-Speed Vehicular Networks**

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9872

This study proposes an innovative integration of the Car-to-Car Network-Hierarchical deep neural network (CtCNET-HDRNN) model with Fifth generation (5G) and Dedicated Short-Range Communications (DSRC) systems, streamlining computational efficiency in edge computing. CtCNET-HDRNN is a specialized deep learning model designed for vehicular communication, allowing vehicles to exchange information seamlessly in a connected environment. It harnesses an adaptive learning rate and regularization within the model's advanced training methodology, ensuring optimal data fit, superior generalization, and efficient convergence. A key novelty lies in the introduction of a Sparse Deep Recurrent Neural Network (SDRNN), which significantly reduces computational complexity by pruning insignificant connections, making it suitable for deployment on resource-constrained edge devices. SDRNN is a variant of recurrent neural networks designed to minimize computational burden while maintaining high performance in time-series data analysis. Furthermore, this research presents an original integration model, adeptly merging the CtCNET-HDRNN model with the Millimeter wave (mmWave) of 5G and Monte Carlo for DSRC systems for seamless data transmission. The mmWave technology offers high-speed communication capabilities, while Monte Carlo enables adaptive collision avoidance and efficient channel access control for vehicular networks. Beyond immediate computational gains, this integrated model also contributes significantly to edge computing research and practical applications, promising enhanced system performance and improved user experience in vehicular communication scenarios. The proposed approach opens new possibilities for efficient and reliable communication in connected vehicles, laying the foundation for safer and smarter transportation systems. © 2013 IEEE.

## Quest for financial inclusion via digital financial services (Fintech) during COVID-19 pandemic: case study of women in Indonesia

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00217-9

Based upon an extended Technology Acceptance Model (TAM), this study aims to investigate the factors influencing the behavioral intention to adopt Fintech from the perspective of Indonesian women. The research data were collected from 409 Indonesian female respondents and analyzed using the SEMinR statistical data analysis tool. Structural equation modeling (SEM) was used to assess this research's measurement model and structural model. The result shows that perceived usefulness, perceived ease of use, user innovativeness, attitude, trust, and brand image significantly positively impact behavioral intention to adopt Fintech among Indonesian women. Meanwhile, perceived ease of use, financial literacy, and government support are found to have indirect relationships with behavioral intention. In addition, moderation analysis revealed that the saving habits of women during the COVID-19 pandemic reduced the relationship between their innovativeness and behavioral intention to adopt Fintech. Based on these results, we recommend practical suggestions to the government, policymakers, and aspiring Fintech service providers further to enhance women's empowerment through digital financial inclusion. © 2023, The Author(s).

## Rapid post-annealing effect on the TiO<sub>2</sub>-based electrochromic films

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55

The electrochromic (EC) window is a promising energy-saving smart window that can vary between three states: transparent, translucent, and opaque by applying low voltages. One of the potential EC materials is known as titanium dioxide (TiO<sub>2</sub>) due to its unique chemical and physical properties. Conventional post-annealing has been commonly employed for phase transition in EC thin films, but it suffers from drawbacks such as long treatment time and high energy consumption. Hence, in this study, TiO<sub>2</sub> thin films were deposited on indium-doped tin oxide (ITO) and fluoride-doped tin oxide (FTO) glass substrates using a sol-gel spin coating technique, followed by a rapid post-annealing interval of 5 min at temperatures ranging from 300 to 450 °C. The optical, morphological, structural, and EC properties of TiO<sub>2</sub> thin films were investigated. The measurement depicted that rapid post-annealing was a cost-effective and time-saving method for realising high-quality TiO<sub>2</sub> EC thin films. Hence, this approach reduces the overall fabrication time and minimises energy consumption, rendering it an environmentally friendly process. The successful deployment of TiO<sub>2</sub> in EC applications paves the way for integrating EC and photovoltaic technologies in energy-saving window glass applications, considering TiO<sub>2</sub> is a crucial element in photovoltaic devices. © 2023

## Real-time germanium-doped optical fibers for clinical computed tomography dosimetry

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In studies focusing on the practice of clinical computed tomography (CT) a particular concern has been that of delivering unnecessary dose to patients and with it the added risk for radiation-induced cancers. For a CT system, present work has investigated the dosimetric characteristics of a Ge-doped optical fiber real-time dosimetry system (model LS-2000, Lumisyns), measuring beam quality, exposure linearity and exposure duration accuracy. For comparison, the study has used a RaySafe X2 test device (Unfors RaySafe) and a Black Piranha (RTI) QA meter. Irradiations were made using a Somatom Definition Flash dual-source 128-slice CT scanner (Siemens Healthcare). The LS-2000, RaySafe X2, and Black Piranha sensors were exposed to beams energized at accelerating potentials ranging from 80 to 140 kVp, with tube current-time products from 50 to 300 mA, and exposure durations from 750 to 2000 ms. Constant signal responses from the LS-2000 have been obtained, measured in respect of beam quality, exposure linearity, and time accuracy. In respect of accuracy of beam quality, the RaySafe X2 and Black Piranha maximum deviations were 1% and 5%, respectively; the coefficients of linearity of RaySafe, Black Piranha and LS-2000 are 1%, 0.4% and 1.4%, respectively; the maximum deviation for the time accuracy test for the three sensors are 0.5%, 2% and 1.3%, respectively. Evaluation of the LS-2000 real-time dosimetry system with a Ge-doped optical fiber scintillator points to potential for its use in clinical CT dosimetry. © 2023

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## Real-Time Segmentation of IHC Images From Microscope Using Deep Learning Architecture

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Segmentation of nuclei in digital histopathology image analysis plays a critical role in the early assessment of breast cancer and may enable patients to get appropriate treatment. In this paper, we create a real-time application that thoroughly examines the effectiveness of various deep learning models, including U-Net, SegNet, ResNet50-Unet, and ResNet50-SegNet, in the domain of real-time segmentation. For real-time implementation, we use an industrial machine vision camera mounted to the microscope, stream the image from the microscope glass slide and segment it using the model. This experiment aims to identify the best deep-learning model for real-time segmentation of nuclei for immunohistochemistry (IHC)-stained glass slides. The models are evaluated in offline mode using test images from estrogen receptor IHC stains, taken from whole-slide images. The effectiveness of the model for real-time work is based on its segmentation computational time. For offline evaluation, the highest F1-score and Jaccard index is achieved by ResNet50-SegNet (85.21%) and ResNet50-Unet (0.725) accordingly. These findings support the proof of concept that deep learning models can effectively segment nuclei in real-time from IHC-stained glass slides. This research serves as a foundation for the future construction of fast and efficient deep learning models for real-time histopathological analysis directly from the microscope. © 2023 IEEE.



## **Real-Time Weather Data for Environment, Social, and Governance (ESG) Decision-Making**

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Keoy K.H.

DOI: 10.57417/jrnal.10.1\_96

In the 21st century, the Internet has undergone unprecedented growth in technology and accessibility, contributing to the achievement of various Sustainable Development Goals (SDGs) related to digital inclusion and technological advancement. This era witnessed the ubiquitous presence of personal computers in daily life, enabling people to access vital information online, thus promoting digital literacy and access to information (SDG 4, SDG 9, SDG 16). Moreover, the rapid expansion of mobile technology has marked a significant milestone in the development of mobile devices, aligning with SDG 9, which emphasizes innovation and infrastructure development. Android and iOS platforms currently dominate the mobile landscape, offering a range of opportunities and challenges for developers. However, the prevalent practice of developing applications exclusively for a single platform has resulted in suboptimal development efficiency, hindering progress toward SDG 9 and sustainability in technological advancements (ESG). In response, developers have begun to explore cross-platform technologies, which not only streamline development across different platforms but also contribute to cost-efficiency and resource optimization (SDG 12). This paradigm shift in development approaches presents a unique opportunity to meet the growing demand for real-time, precise, and diverse weather information. In response, this study proposes the creation of a mobile application-based weather forecast system. This system places a strong emphasis on user interface (UI) design and the successful implementation of key functionalities, promoting user-friendly access to weather data and aligning with the principles of inclusive design and technological accessibility (SDG 4). In summary, this research endeavors to harness the advancements in mobile technology and cross-platform development to deliver an innovative weather forecast system, ultimately contributing to the broader goals of digital inclusion, technological sustainability, and user-centric design in line with SDGs and ESG principles. © 2022 The Author.

## Retinal changes and cardiac biomarker assessment in relation to chronic kidney disease: a single centre study

Mustafar R.; Hishamuddin K.A.M.; Mohd R.; Kamaruzaman L.; Halim W.H.W.A.; Hsien Y.M.; Sze T.K.; Zaki W.M.D.W.; Ali A.; Bain A.

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**Background:** The prevalence of chronic kidney disease (CKD) is rising in Malaysia. Early detection is necessary to prevent disease progression, especially in terms of cardiovascular (CV) risk, the main cause of death in end-stage renal disease (ESRD). Retinal changes have proven to be a good predictor of CKD whereas cardiac biomarkers are useful in cardiovascular risk stratification. We aimed to demonstrate the correlation between retinal changes and cardiac biomarkers with CKD. **Methods:** This single-centre cross-sectional study was conducted among patients with CKD stages 3, 4, and 5 (not on dialysis) from the Nephrology Clinic, Universiti Kebangsaan Malaysia Medical Centre. A total of 84 patients were recruited with an even distribution across all three stages. They underwent fundus photography where images were analysed for vessel calibre (central retinal venular equivalent (CRVE), central retinal arterial equivalent (CRAE), and tortuosity indices. Optical coherence tomography was used to measure macular volume. Blood samples were sent for laboratory measurement of high-sensitivity C-reactive protein (hs-CRP) and asymmetric dimethylarginine (ADMA). These parameters were analysed in relation to CKD. **Results:** The mean age was  $58.8 \pm 11.7$  years, with 52.4% male and 47.6% female patients. Among them, 64.3% were diabetics. Retinal vessel tortuosity ( $r = -0.220$ ,  $p$ -value = 0.044) had a negative correlation with the estimated glomerular filtration rate (eGFR). CRVE showed a positive correlation with proteinuria ( $r = 0.342$ ,  $p = 0.001$ ) but negative correlation with eGFR ( $r = -0.236$ ,  $p = 0.031$ ). Hs-CRP positively correlated with proteinuria ( $r = 0.313$ ,  $p = 0.04$ ) and negatively correlated with eGFR ( $r = -0.370$ ,  $p = 0.001$ ). Diabetic patients had a higher CRVE compared to non-diabetic patients ( $p = 0.02$ ). History of ischaemic heart disease was associated with a smaller macula volume ( $p = 0.038$ ). Male gender ( $r^2 = 0.066$ ,  $p = 0.031$ ) and HbA1c had a positive influence ( $r^2 = 0.066$ ,  $p = 0.047$ ) on retinal vessel tortuosity. There was a positive influence of age ( $r^2 = 0.183$ ,  $p = 0.012$ ) and hs-CRP ( $r^2 = 0.183$ ,  $p = 0.045$ ) on CRVE. As for macula volume, it negatively correlated with diabetes ( $r^2 = 0.015$ ,  $p = 0.040$ ) and positively correlated with smoking ( $r^2 = 0.015$ ,  $p = 0.012$ ). **Conclusion:** Our study showed that eGFR value affects retinal vessel tortuosity, CRVE and hs-CRP. These parameters bear potential to be used as non-invasive tools in assessing CKD. However, only macula volume may be associated with CVD risk among the CKD population. © 2023, The Author(s).

## Reliable Multi-Path Communication for IoT Based Solar Automated Monitoring as Motivation Towards Multi-Farming Hydroponic

Khang A.W.Y.; Alsayaydeh J.A.J.; Gani J.A.B.M.; Pusppanathan J.B.; Teh A.A.; Ismail A.F.M.F.; Geok T.K.

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The current reliance on single-path communication presents limitations for effectively monitoring and controlling critical parameters that are essential for hydroponic success. This hampers the achievement of optimal plant growth and overall system performance in multi-farming hydroponic setups. The issue lies in the inherent vulnerabilities of single-path communication, which can result in data loss and transmission errors. Therefore, reliable multi-path communication is essential for Internet of Things (IoT)-based automated monitoring systems. The research aims to enhance monitoring and control capabilities in multi-farming hydroponic environments by integrating advanced communication technologies. Utilizing the ESP microcontroller in conjunction with the Painless Mesh library enables seamless communication among nodes, facilitating real-time data exchange and control. Additionally, app-based dashboard monitoring offers a user-friendly interface for remote monitoring. The findings demonstrate that reliable multi-path communication, combined with app-based dashboard monitoring, promotes optimal plant growth, efficient resource allocation, and sustainable multi-farming practices. In summary, this research contributes to a deliberate efficiency increase of 30% in pH level, 25% in humidity level, and 35% in temperature level. This paves the way for adopting efficient multi-farming hydroponic solutions that are based on resource-efficient energy usage. © 2023 by the authors of this article. Published under CC-BY.

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## Safety At The Workplace: Academics' Awareness At Higher Education Institutions In Melaka

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The research was carried out to assess the academics' awareness of occupational safety and health (OSH) at higher education institutions in Melaka. Questionnaires were the primary data collection tools used in this study. The cross-sectional design was used in this research. The survey was distributed to 200 respondents, and 151 valid responses were received from the higher education institutions in Melaka. The collected data were analysed using a structural equation modelling by partial least squares executed by the SMART-PLS software. The results showed that safety tools and equipment, safety policy, and safety procedures have a significant positive relationship with academics' awareness at higher education institutions ( $p < 0.05$ ). However, safety training does not affect academics' awareness of OSH at the workplace ( $p > 0.05$ ). This study enhances the OSH implementation strategies to ensure the safety of academics in the workplace. Hence, it will contribute to the development of a positive safety culture in the workplace. © 2023, Malaysian Journal of Public Health Medicine. All Rights Reserved.

## Scheduling and Predictive Maintenance for Smart Toilet

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1942

Modern society needs bathrooms. Poor sanitation is caused by worn-out appliances and expensive cleaning. The technique also requires an inexpensive, dependable sensor. This study had three goals. Creating an IoT administration platform is the main goal. Literature evaluations assess the merits and downsides of existing systems. Second, we suggest predictive maintenance to assist predict bathroom equipment breakdowns. Finally, a scheduling algorithm was used to determine how many janitors to hire. We'll measure the model's effectiveness and make future recommendations. Infrared, temperature and humidity sensors create an IoT bathroom. Sensors have been studied to understand how to adapt them to the hygienic and private toilet environment. Sensor accuracy and cost-effectiveness could be enhanced with more development and testing. The Auto-Regressive Integrated Moving Average (ARIMA) model accurately predicts time series lags, making it a good candidate for predictive maintenance. Long Short-Term Memory (LSTM) is good in time series predictions, therefore it's fair to compare the two. We use the ARIMA model to handle Remaining Useful Life (RUL) prediction techniques by altering Moving Average (MA) and Auto-Regressive (AR). A genetic algorithm is used to create a janitorial cleaning schedule. The genetic algorithm was proposed to schedule cleaning workers. This approach improves the genetic algorithm by studying soft and hard scheduling restrictions. The Greedy algorithm is used to compare. Experimental evaluations reveal that the suggested model ARIGA meets both goals. © 2013 IEEE.

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## Second Life EV Batteries: Technical Evaluation, Design Framework, and Case Analysis

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0044

As the global adoption of Electric Vehicles (EVs) surges, efficient management of retired EV batteries is becoming vital. Second-life Batteries (SLBs), repurposed from retired EV batteries, offer a sustainable energy solution. This paper provides a step-by-step technical assessment, covering battery removal from cars, assessment, and integration into second life applications, focusing on the Nissan Leaf Generation 1. The assessment includes comprehensive testing and presents the results of each test. It outlines the repurposing process, calculating capacity for second life application which was a solar-powered streetlight in this experiment. Economic aspects are explored, with a formula for retired battery purchasing price and the repurposing cost related. The paper also examines State of Health (SOH) degradation in the second life application, showing a decline from an initial 49.17% to 44.75% after 100 days and further to 29.25% after 350 days in the second life application. Factors affecting the degradation such as remaining capacity and internal resistance and their inter-relation were investigated. Challenges in SLB implementation are discussed, along with future recommendations. This study underscores the significance of SLBs in promoting sustainable energy systems amid growing EV usage. © 2013 IEEE.

## Sentiment Analysis of E-Wallet Companies: Exploring Customer Ratings and Perceptions

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This sentiment analysis research reports a systematic study of customer reviews of unstructured data for seven popular e-wallet companies, including Alipay, Google Wallet, Grab Superapp, PayPal, Samsung Wallet, Shopee MY, and Touch 'n Go eWallet. Previously, companies faced challenges in effectively utilizing customer reviews to understand and assess customer sentiment toward their products or services. However, with advancements in sentiment analysis techniques, companies can harness the power of customer reviews to gain valuable insights and improve their offerings. The purpose of this study is to explore the use of sentiment analysis in e-wallet companies, where understanding customer sentiment is crucial for enhancing user experiences and driving business success. The research methods employed in this study start by collecting customer reviews spanning four years, from 2019 to 2022. Next, four data pre-processing methods are applied to transform the raw review data into a suitable format for sentiment analysis: data standardization, tokenization, stop word removal, and lemmatization. Sentiment analysis methods were then used to classify reviews as positive, neutral, or negative for each e-wallet company. This study introduced a novel method using rating accuracy to evaluate the polarity sentiment classifications. The results of this study revealed that all e-wallet companies had high rating accuracies for positive sentiments, indicating positive customer sentiment towards their services. However, the rating accuracies for negative sentiments were lower, suggesting challenges in accurately predicting and classifying negative customer sentiment. For neutral sentiments, the rating accuracies were generally low, except for Alipay in 2019, which demonstrated the highest accuracy in capturing customer-neutral sentiment. The evaluation of the findings of this study has important implications for both theory and practice in the e-wallet industry. The practical implications of this study offer concrete guidance for e-wallet companies to enhance their services based on customer sentiments. In contrast, the theoretical implications highlight the need for ongoing research and innovation in sentiment analysis methods that consider other than customer ratings within the e-wallet industry. This study contributes to sentiment analysis by introducing rating accuracy as a measure for evaluating customer reviews accurately. The contribution will provide a more comprehensive understanding of customer sentiments. The methods employed in this study can be applied to enhance sentiment analysis in various customer relationship management domains. © 2023, Success Culture Press. All rights reserved.

## **Sectoral foreign direct investment and environmental degradation: new insights from diversification of energy mix containing fossil fuels and renewable energy**

Solarin S.A.; Sahu P.K.

DOI: 10.1007/s11356-023-28741-0

The objective of the study is to extend the existing literature by investigating the effects of foreign direct investment, gross domestic products and per capita and energy diversification on the nitrogen oxide emissions in Brazil, Russia, India, China and South Africa (BRICS) by using annual data during the period 1992–2019. As per our knowledge, the present study is a first of its kind to examine the impact of a new energy diversification index, based on Herfindahl-Hirschman framework on pollution. This study has adopted a new quantile regression augmented method of moments, which is capable of producing the total impacts of the independent variables across the entire distribution of nitrogen oxides emissions. The findings suggest that an increase in foreign direct investment leads to a decrease in nitrogen oxides emissions at the aggregate level and in both manufacturing and service sectors. We observe that foreign direct investment leads to an increase in nitrogen oxides emissions in the agricultural sector in most of the quantiles. Diversification towards renewable energy causes a decrease in nitrogen oxides emissions in most quantiles at aggregate level, agricultural and manufacturing sectors, whilst diversification leads to an increase in nitrogen oxides emissions in the service sector. The findings also suggest that GDP per capita leads to an increase in NO<sub>x</sub> emissions in all the quantiles. The study suggests the policy to use and attract more clean energy through foreign direct investment for towards the achievement of sustainable development. © 2023, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.

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## **Six core values in natural law as a common concern for human development**

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This paper attempts to identify the core values in natural law as a shared value system, based on natural law theories and issues confronting the world today. It identifies the doctrines that influence major natural law thinking and then proposes a minimum content for constitutionalism based on such natural law shared values. The purpose is to identify with clarity over-riding principles of natural justice in solving practical problems. The methodology adopted is doctrinal, conceptual, and analytical. The findings detail common values for humanity and mandate revisions of modern constitutions considering the conclusions reached based on natural law dictums. This article is the first of its kind to link natural law with constitutionalism while explicating the ends of natural law considering experience and observation. It is also proposed in this research that if governments fail to meet the social contract with the people on the core values, then international dispute resolution forums and human rights advocates should play their part in enforcing these common core values. © 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

## **Smart Machine Learning-based IoT Health and Cough Monitoring System**

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DOI:  
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Coronavirus 2019, more commonly known as COVID-19, was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020. The  $\beta$  coronavirus culpable for the disease, SARS CoV-2, is known to be highly contagious with a relatively long incubation period of up to 14 days and is transmittable through small droplets, especially among people who are in close face-to-face contact. The Ministry of Health of Malaysia has recommended five days of quarantine for people who are positive for COVID-19 to avoid further disease transmission. Many resources are used to monitor patients throughout the quarantine period. Therefore, this project would like to present an IoT-enabled wearable device capable of monitoring COVID-19 quarantine patients by utilizing sensors to monitor the necessary health parameters and facilitate home quarantine. The low-cost ESP32 and Arduino Nano 33 BLE Sense microcontrollers are used in this device. They are connected to various IoT sensors to collect temperature, humidity, and sound data. The data obtained will then be uploaded to an IoT platform for doctors to analyze and monitor remotely via the health log throughout the 5-day quarantine period. An alert system is also devised to inform the medical staff if the patient is experiencing abnormal symptoms. The medical staff can then bring their attention to the patient and take the necessary actions to combat COVID-19. © (2023), All Rights Reserved.

## **Smart Tourism Technology Framework: A Gateway to Enhancing Tourists' Experiences and Psychological Behaviour**

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3.10248730

Malaysian tourism industry has suffered losses of over RM100 billion due to the COVID-19 outbreak, as China and Singapore cancelled their tours to Malaysia. To counter this, the National Tourism Policy (2020-2030) must focus more on domestic travel and digitalisation to strengthen sustainable tourism and drive economic growth. The aim of the study is to investigate the determinants that contribute to smart tourism technologies and propose a framework that can create new revenue streams. Personalisation and digital experience should be prioritised to attract tourists and achieve Malaysia's goal as a top Mind Ecotourism Destination of the World. The research employs a 400 self-administered survey for data collection from generations X and Y who are travellers by applying purposive sampling and PLS-SEM methods. Malacca, Negeri Sembilan, Perak and Penang are the focus group areas. The study is crucial to meet Budget 2022, KEGA 15, and SDGs 8, 12, 14, and 15, which aim to revitalise the tourism sector and improve economic growth. Tourists employ technology for attaining information on the infrastructure of the desired target destination. © 2023 IEEE.

## **Social Media Interactive Advertising and Purchase Intention of the UAE Customers: An Empirical Analysis; [Pengiklanan Interaktif Media Sosial dan Niat Pembelian Pelanggan UAE: Suatu Analisis Empirik]**

Yousaf M.F.; Choo K.A.;  
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5208-06

The advent of social media technologies, specifically the phenomenal growth of online and interactive advertising, has assisted various organizations in responding to and communicating with respective consumers at sustainable expenditures through various online channels, including social media, with immense potential and popularity levels. Limited studies have been conducted to examine the connection between consumer engagements by small and medium enterprises (SMEs) and their respective promotional performances, as consumer purchase intention would be notably affected by the ability of an enterprise to interact and share information. Therefore, the current study aims to evaluate the impacts of attitude, brand loyalty, brand image, and brand awareness on interactive advertising and engagement with consumers via social media in the United Arab Emirates (UAE) to promote SME digital lifestyle products. Accordingly, a quantitative survey was administered to evaluate 308 responses from customers of companies vending digital lifestyle products before conducting partial least square structural equation modeling (PLS-SEM) to analyze the collected data. The results demonstrated significant positive relationships between both brand loyalty and brand awareness and consumer purchase intention, respectively, whereas the relationships between attitude and brand image and consumer purchase intention were separately discovered to be insignificant. © 2023 Penerbit Universiti Kebangsaan Malaysia. All rights reserved.

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## **Sodium Counting System in Mass Catering for Therapeutic Diet Preparation**

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21

Sodium is a well-known substance to enhance food taste, but the intake must be restricted, especially for patients who require a low-sodium diet. The amount of added salt in cooking can be optimized and controlled by calculating the total sodium in the ingredients used. This process is cumbersome for hospital meal catering, in which food is prepared based on the number of daily orders and specific diets. The existing solution uses a spreadsheet for calculating the amount of sodium, which is vulnerable to errors and not user-friendly. This paper presents a systematic system that can monitor and control the amount of sodium during meal preparation for hospital catering. The system consists of two main parts: a desktop application and an automated salt dispenser. The application keeps track of sodium usage based on the final ingredient list and the meal plan, thus allowing the catering officer to check the feasibility of changing the sodium amount needed for cooking without doing any manual calculations. The application is then integrated with a salt dispenser to ensure the salt amount used in the cooking is as intended. The successful implementation of this system supports Malaysia's 2021–2025 salt reduction strategy to prevent and control Non-Communicable Diseases (NCD). It is also consistent with SDG 3: Good Health and Well-Being, which calls for a global decrease in salt intake of 30%. © (2023), (Insight Society). All Rights Reserved.



## **Solar Photovoltaic Home Systems in Malaysia: A Comprehensive Review and Analysis**

Sarker M.T.; Haram M.H.S.M.; Ramasamy G.; Al Farid F.; Mansor S.

DOI: 10.3390/en16237718

This paper presents a thorough review and analysis of solar photovoltaic (PV) home systems in Malaysia, offering a comprehensive exploration of their implementation, challenges, benefits, and future potential. As a nation striving to embrace sustainable and renewable energy solutions, Malaysia's adoption of solar PV systems at the residential level is of paramount importance. The study delves into the current state of solar PV deployment, government initiatives, and policy frameworks that influence adoption trends. It examines the economic, environmental, and societal advantages of solar PV home systems, outlining their contribution to reducing electricity costs, carbon emissions, and energy dependence. Addressing barriers to wider acceptance, the paper scrutinizes challenges encompassing cost, awareness, intermittency, and regulatory constraints. Furthermore, the study evaluates the socio-economic implications of solar PV home systems, including potential job creation and energy independence. Technological advancements, such as enhanced efficiency and smart grid integration, are also explored for their role in surmounting obstacles. Drawing insights from practical case studies, the paper underscores successful installations and the lessons they offer. In examining policy and regulatory frameworks, it analyzes existing incentives while suggesting improvements to accelerate adoption. Finally, the paper offers a visionary perspective on the future trajectory of solar PV home systems in Malaysia, envisioning increased affordability, advanced energy storage solutions, and seamless integration with emerging technologies. This holistic analysis contributes valuable insights to propel Malaysia's sustainable energy transition and inform strategic decision making for stakeholders across sectors. © 2023 by the authors.

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## **Structural modelling on factors of adopting fintech among malaysian millennials: Perceived covid-19 risk as moderator**

Hossain M.I.; Alam M.K.; Johari Z.; Tasnim M.; Ferdaous K.I.; Pal T.

DOI: 10.4018/978-1-6684-6782-4.ch008

This empirical paper investigates the role of perceived usefulness (PU), perceived ease of use (PEU), social influence (SI), service trust (ST), user innovativeness (UI), and technological optimism (TO) on intention to adopt Fintech (ITAF) by Malaysian millennials with the moderation of perceived Covid-19 risk (PCR). Theory of planned behaviour, technology adoption model, and social cognitive theory are applied to amalgamate the concept. Data of 313 millennials who are in university were collected using a convenient sampling technique and a structured questionnaire. The data was analysed in partial least squares structural equation modeling (PLS-SEM). The result shows that PU, SI, ST, and TO influence ITAF significantly. Surprisingly, PEU and UI did not evidence significant impact. Moreover, PCR did not show moderating influence. This study can provide important insights for the Fintech users, industry players, policymakers, and government to comprehend the concept so that the adoption of Fintech can be fostered towards achieving a smart and digital Malaysia. © 2023 by IGI Global. All rights reserved.

## Strain-Induced SiP- PtS<sub>2</sub> Heterostructure with Fast Carrier Transport for Boosted Photocatalytic Hydrogen Conversion

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DOI:  
10.1021/acs.jpcc.3c02431

Earth-abundant silicon-, phosphorus-, and sulfur-related compounds are crucial for optoelectronic application. Specifically, experimentally proven monolayer SiP has attracted a great deal of attention in above listed field owing to its unique properties but is plagued with challenges such as photocorrosion and poor charge separation. Moreover, theoretical understanding on the relationship of the interface and photocatalytic activity in SiP-based chemicals is not well understood. In this work, hybrid functional first-principles calculations were used to explore the photocatalytic hydrogen evolution activity of SiP-PtS<sub>2</sub> heterostructure. Further examination of phonon, ab initio molecular dynamics (AIMD), and elastic property simulations confirms its dynamical stability. Its computed band gap of 1.59 eV is suitable for maximizing solar energy conversion efficiency, with noticeable strong absorption coefficients of 10<sup>5</sup> cm<sup>-1</sup> order across visible-ultraviolet domains, asymmetric decent carrier mobility (~10<sup>3</sup> cm<sup>2</sup> V<sup>-1</sup> s<sup>-1</sup>), and low exciton binding energy (0.56 eV). Differences in charge density and Bader and Mulliken population analyses reveal that charge flows from the SiP to the PtS<sub>2</sub> layers, performing the dual functions of segregating photoinduced charge carriers and increasing their lifetimes. The relative band alignment of the monolayers promotes a spatial separation of the charges. An important feature of this heterostructure is that the band edges cross the water redox potential at pH of 0 upon ~2% of compressive biaxial straining, with  $\Delta G$  for hydrogen evolution reaction (HER) barrier lower than -0.2 eV. The quadratic relationship between biaxial strain and atomic energy indicates that both the system and strains are elastic. Redox thermodynamic analysis predicts facile hydrogen production on the heterostructure. In particular, the calculated maximum solar power conversion efficiency (PCE) and solar-to-hydrogen (STH) efficiency can reach 22.9 and 23.8%, respectively. © 2023 American Chemical Society

## Supertwisting Sliding Mode Control for Parallel Hybrid Electric Vehicle Control Strategy

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10165316

Control strategy for hybrid electric vehicles (HEVs) is a method of energy management that helps with production, consumption, and conservation. To successfully manage hybrid electric vehicles, the best control technique is a big challenge. This study introduces super-twisting sliding mode control (STSMC) to optimise the state of charge (SOC) in parallel HEVs to achieve optimal control. The proposed proportional gain,  $k$ , varied in three values and was verified using the ADVISOR (Advanced Vehicle Simulator) MATLAB simulation. The simulation results were used to validate the proposed design's performance in terms of SOC stored energy, overall efficiency, and fuel emission. The proposed control strategy can improve the SOC at 571 seconds, overall efficiency ratio to 0.239, stored energy 5042 kJ, and be able to lower fuel emissions, according to the results. © 2023 IEEE.

## **Strategic orientations, organizational ambidexterity, and sustainable competitive advantage: Mediating role of industry 4.0 readiness in emerging markets**

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Mohiuddin M.; Reza M.N.H.

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65

We explore the relationship between strategic orientations (market orientation and entrepreneurial orientation), organizational ambidexterity, and sustained competitive advantage under the mediation of Industry 4.0 readiness. Based on data from a sample of 144 SMEs belonging to different economic sectors, we employed partial least squares–structural equation modeling to test our hypotheses. Empirical research suggests that market orientation and entrepreneurial orientation have a favorable relationship with Industry 4.0 readiness and sustainable competitive advantage. Moreover, our findings reveal that entrepreneurial orientation has a greater effect on SCA than market orientation in emerging markets. Furthermore, Industry 4.0 readiness acts as a full intermediary between strategic orientations and sustainable competitive advantage. This study contributes to the existing literature by exploring the relationship between strategic orientation and sustainable competitive advantage through Industry 4.0 as the mediator. SMEs' managers can use these findings to rethink their technology adoption strategies and exploitative and explorative approaches. © 2023 Elsevier Ltd

## **The role of open innovation and a normalizing mechanism of social capital in the tourism industry**

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6

Social considerations and potential for innovation in resource and technological exploitation processes have dominated traditional ideas of regional development. Similar to how regional economic progress is sometimes expressed in terms of job creation and rising property prices. An alternate viewpoint contends that the business community must be included into construction and planning strategies to counterbalance the conventional economic perspective since this approach often overlooks the social and community components of tourist development. This study makes the case that encouraging creativity in regional development (ASEAN) entails much more than just consulting the local tourist operators, but consideration should be given to regional open innovation concept. Although tourism development may be carried out in a fashion that enhances innovation, but it also requires a certain degree of external country partner (open innovation) so that it can serve its intended purpose as a tool for regional development and even contribute to the economy. The main ideas of human capital, structural capital, relational capital is discussed in this study. It does so in the framework of local tourist development, as well as the ideas of innovative development systems and sustainable development. The interplay of various kinds of social capital and various innovations in the growth of tourism that is both bridging and bonding is examined in this study. Increasing social capital shouldn't be seen as a quick fix to increase tourism. Thus, it may be claimed that regional policies focused at supporting non-traditional kinds of innovation should reflect the need of building and sustaining specific types of connectivity, namely social capital bridges. © 2023 The Author(s)

## **The Development of a Data Collection and Browser Fingerprinting System**

Pau K.N.; Lee V.W.Q.; Ooi S.Y.; Pang Y.H.

DOI: 10.3390/s23063087

The urgent need to protect user privacy and security has emerged as the World Wide Web has become an increasingly necessary part of daily life. Browser fingerprinting is a very interesting topic in the industry of technology security. New technology will always raise new security issues and browser fingerprinting will undoubtedly follow the same process. It has become one of the most popular topics in online privacy because, to date, there is still no exact solution as to how to stop it entirely. The majority of solutions just aim to reduce the likelihood of obtaining a browser fingerprint. Research on browser fingerprinting is unquestionably required since it is essential to educate users, developers, policymakers, and law enforcement about it so that they can make strategic choices based on knowledge. Browser fingerprinting must be recognised in order to defend against privacy problems. A browser fingerprint is described as data gathered by the receiving server to identify a distant device, and it is different from cookies. Websites frequently utilize browser fingerprinting to obtain information about the type and version of the browser, as well as the operating system, and other current settings. It has been known that even when cookies are disabled, fingerprints can be used to fully or partially identify users or devices. In this communication paper, a new insight into the challenge of browser fingerprint is encouraged as a new venture. Thus, the initial way to truly understand the browser fingerprint is the need to collect browser fingerprints. In this work, the process of data collection for browser fingerprinting through scripting, to offer a complete all-in-one fingerprinting test suite, has been thoughtfully divided into appropriate sections and grouped with key information to be carried out. The objective is to gather fingerprint data with no personal identification information and make it an open source of raw datasets in the industry for any future research purposes. To our best knowledge, there are no open datasets made available for browser fingerprints in the research field. The dataset will be widely accessible by anyone interested in obtaining those data. The dataset collected will be very raw and will be in the form of a text file. Thus, the main contribution of this work is to share an open dataset of browser fingerprints along with its collection methodology. © 2023 by the authors.

## **The development of efficient photocatalysts to improve light absorption and charge separation properties for photoelectrochemical water splitting**

Marlinda A.R.; Sarjidan  
M.A.M.; Thien G.S.H.;  
Yusoff N.; Noor A.M.

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85183602213&partnerID=40&md5=48a3b3812e0d76049f2d0db9efd9e69c>

Photoelectrochemical (PEC) water splitting is a process that uses solar energy to split water into hydrogen and oxygen using a specialised photoelectrochemical cell. PEC water splitting has the potential to be an attractive way of producing hydrogen gas, as it can be powered by renewable energy sources such as sunlight. Generally, research advancement in PEC water splitting has shown positive potential in developing a sustainable and efficient way of producing hydrogen gas using renewable energy sources. However, the efficiency and viability of PEC water splitting significantly depend on a few key factors, including photocatalyst efficiency, device architecture optimisation, and electrode stability. Thus, this chapter focuses on the most up-to-date developing materials with improved light absorption and charge separation properties for PEC water splitting. In addition, this chapter also discussed future trends and success challenges of the PEC water splitting to provide an outlook for future research. © 2024 Nova Science Publishers, Inc.

## **The effect of research intensity on total factor productivity in OECD countries during 1890–2018: evidence from a new Poisson pseudo maximum likelihood estimation approach**

Solarin S.A.; Sahu P.K.

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In the literature of total factor productivity (TFP), the roles of several variables in explaining TFP remain largely unexplored, including the impact of research intensity. This paper examines the effect of research intensity on TFP in 15 OECD countries, while providing for financial development and education level during the period 1890–2018. We have used a new Poisson maximum likelihood estimation method, which requires minimal assumptions about the data distribution, to estimate the relationship in the variables. The results reveal that research intensity, financial development, education level and oil crisis have positive impact on TFP, while the two World Wars have negative impact on TFP. In the model featuring all the control variables and dummies, it is observed that for every one percentage point increase in research intensity, TFP grows by 0.086 point. The results further show that the positive impact of research intensity on TFP is more conspicuous in G7 countries relative to non-G7 nations. The sample has been divided into G7 and non-G7 countries and the equations are re-estimated. The empirical results are not materially different from results of the 15 OECD countries. For the sake of robustness, we have also used a new sequential linear panel data estimation approach to estimate the impact of research intensity on TFP, but similar results are obtained. The policy implications of the empirical results are detailed in the paper. © 2023, The Author(s), under exclusive licence to Springer Nature B.V.

## **Sustainable entrepreneurship in Malaysian companies**

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DOI:  
10.55493/5002.v13i2.4708

Sustainable entrepreneurship refers to the economic, social, and environmental value creation across enterprises in Malaysia. When examining sustainable entrepreneurship in Malaysian companies, small and medium-sized enterprises (SMEs), which serve as the backbone of the Malaysian economy and account for 97.2% of businesses and generate 38.2% of the gross domestic product, cannot be overlooked. The research is the first study in Malaysia, which extends the entrepreneurial event model to develop a comprehensive research framework to examine and propose suggestions to improve sustainable entrepreneurship in SMEs. A questionnaire was distributed to 400 entrepreneurs from SMEs in central regions in Malaysia, and 300 complete and valid questionnaires were used for the analysis. All constructs in the questionnaire were tested and confirmed to have high convergent validity and high composite reliability. The results show that perceived desirability, perceived feasibility and propensity to act have a positive effect on sustainable entrepreneurship in SMEs. Young entrepreneurs under 40 years old show greater propensity to act on sustainable entrepreneurship compared to older entrepreneurs aged over 40 years old. This research offers practical and theoretical new insights for SMEs, entrepreneurs, employees, and institutions toward improving sustainable entrepreneurship in a developing nation in Asia. © 2023 AESS Publications. All Rights Reserved.

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## **Telecommunication Fiber Box Detection Using YOLO in Urban Environment?**

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N.; Rahman A.A.A.

DOI:  
10.18517/ijaseit.13.6.19027

The Fiber Distribution Panel (FDP) box is an essential piece of internet access hardware because it provides users with high-speed data networking and functions as a cable organizer to reduce wire clutter. After installing the FDP, an inspection must be performed to ensure that all necessary components are present. However, this examination is still done manually; the technician snaps a picture of the panel and sends it to its supervisor for verification, which is time-consuming and often prone to errors. In addition to images captured in low-light and complex environments, it makes it more difficult for humans to identify the components with just a naked eye. On this matter, a much more efficient method to assess the FDP installation work is very much needed. Therefore, using computer vision approaches, we utilize a deep learning algorithm to perform object detection and automate the assessment of FDP installation components based on visual data. One of the deep learning models established in the literature is the You Only Look Once (YOLO) model, a one-stage deep learning object detection algorithm that employs a fully conventional approach to generate highly accurate real-time predictions. This paper uses YOLOv5s to identify the fiber box and its relevant components, even in urban environments. Experimentations show that YOLO successfully identified the installation parts with a mean average precision score of 86% at a 0.5 confidence level, even with limited data. © (2023) All Rights Reserved.

## **The Adoption of Robo-Advisory among Millennials in the 21st Century: Trust, Usability and Knowledge Perception**

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Hassan N.M.; Samsurijan  
M.S.; Ebekozien A.

DOI: 10.3390/su15076016

Robo-advisor has become the new personal wealth management and investment method. Nonetheless, certain predicaments are faced by robo-advisor companies as a tech-savvy young group of individuals seems to be less willing to adopt robo-advisory. This study investigates millennials' adoption of robo-advisory in terms of financial knowledge, trust and usability perception in the 21st century to enhance sustainability. This quantitative study focuses on individuals belonging to the millennial generation who were born between 1981 and 1996. The findings indicate that the millennials who possess financial knowledge, as well as perceived usability and trust have a significant positive effect on the willingness to embrace robo-advisory as a tool for wealth management. The higher the financial knowledge of an individual, the more likely they are willing to adopt a robo-advisor. Government may provide appropriate avenues to enhance financial knowledge, and credible and user-friendly platforms with resources to boost the millennials' usage of robo-advisors for their wealth management. With robust artificial intelligence, robo-advisory continues to support users, especially millennials, through three dimensions of sustainable development: environment, society, and economy. © 2023 by the authors.

## **The Connection between Absorptive Capacity and Green Innovation: The Function of Board Capital and Environmental Regulation**

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T.S.; Lan N.T.P.; Muthaiyah  
S.; Latief R.

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10.3390/ijerph20043119

The stress of environmental regulations, sustainable development objectives, and global warming is becoming more prominent now. Most studies conclude that the industrial sector is largely at fault and under tremendous pressure to address these climate change issues. This study highlights the significance of green innovation to Chinese firms in mitigating these conservational challenges, and the study probes the association between green innovation and absorptive capacity. Additionally, board capital (the social and human capital of directors) and environmental regulation—both drivers of green innovation—are explored as moderators between green innovation and absorptive capacity. With appropriate econometric methods and theoretical support from the natural resource-based review, the resource dependency theory, and the Porter hypothesis, the results indicate the positive relationship between green innovation and absorptive capacity. They also reveal board capital and environmental regulation as positive moderators, emphasizing their significance to green innovation. This study offers several suggestions and directives for stakeholders, such as businesses, policymakers, and governments, to foster green innovation for greater profitability, minimizing negative industrial consequences. © 2023 by the authors.

## **The Effect of LED Grow Light Photoperiods on Indoor Hydroponic Lettuce Farming**

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7

With the recent advancement in Internet-of-Thing (IoT) technology, smart farming has rapidly evolved as an alternative solution to improve the effectiveness of plant growth and provide a better farming management. The implementation of smart farming involves the use of technology such as big data, the internet of things (IoT), and cloud servers. It is widely known as precision farming because the process of plant growth is managed by software and a sensor-monitoring system. The applications of smart farming are widely implemented in indoor farming especially hydroponic farming. Hydroponic indoor farming is a fast-growth sector due to the lack of land for agriculture caused by urbanization. For indoor farming, grow-light is a crucial factor for plant growth. The most effective and commonly used grow light is the Light Emitting Diodes (LED) grow light. The utilization of LED grows light offers many advantages over traditional grow lighting including less power consumption, generating lower heat and recyclable. Multiple research and investigations have been done on LED's wavelength and intensities effect on the plants. However, the duration of exposure to LED grow light on the plants has the most significant influences on the growth rate of plants. In this project, an investigation into the photoperiods of the LED grow-light has been deployed for lettuce. The photoperiods are 14 hours of LED, 8 hours LED, combination of 8 hours sunlight and 3 hours LED, and compare with 8 hours sunlight. The presented results concluded that 14 hours of LED grow light duration on hydroponic vegetables has the most promising growth rate in indoor hydroponics lettuce farming. © 2023, Penerbit Akademia Baru. All rights reserved.

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## **Susceptibility to instant messaging phishing attacks: does systematic information processing differ between genders?**

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00176-2

The purpose of this research is to fill gaps in the literature by focusing on gender differences in perceptions of phishing susceptibility among Malaysian university students. Based on the Heuristic-Systematic Model of information processing, a theoretical model of victimization by instant message phishing was developed. Smart PLS-SEM was used to analyse 386 valid responses from an anonymous online survey. The findings reveal significant gender differences in systematic phishing processing, with male students emphasizing argument quality and female students emphasizing message involvement. This study discovered that persuasive phishing messages increase the likelihood of instant messaging phishing victimization in university students. When a phishing message has a high level of message involvement, Internet users have intents (a favourable attitude) to share personal information online. The findings provide insights that should be communicated to students early on to help them scrutinize message authenticity and fine-tune their security knowledge. © 2023, The Author(s), under exclusive licence to Springer Nature Limited.



## **The Effect of Transparent Conducting Oxide Films on WO<sub>3</sub>-Based Electrochromic Devices with Conducting Polymer Electrolytes**

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Over the past few decades, electrochromism has been a prominent topic in energy-saving applications, which is based on the mechanism of altering the optical transmittance of EC materials under the effect of a small applied voltage. Thus, tungsten oxide (WO<sub>3</sub>) is a significant chemical compound typically applied in electrochromic devices (ECDs) as it is responsible for the optical transmittance variation. In this work, the WO<sub>3</sub> films were produced through a sol-gel spin-coating method. The effect of various transparent conducting oxides (TCOs, which are indium-doped tin oxide (ITO), fluorine-doped tin oxide (FTO) glass substrates, and aluminum-doped zinc oxide (AZO)) was investigated in the construction of ECDs. Based on a conducting polymer polypyrrole carbonate electrolyte, ITO and aluminum-doped zinc oxide (AZO)-coated glasses were also examined as counter electrodes. The electrode combination employing FTO and ITO as the TCO and counter electrode, respectively, exhibited the most significant coloration efficiency of 72.53 cm<sup>2</sup>/C. It had coloring and bleaching transmittance of 14% and 56%, respectively, with a large optical modulation of 42%. In addition to that, ECDs with the AZO counter electrode have the advantage of lower intercalation charges compared to ITO and FTO. Hence, this research offers a new avenue for understanding the role of common TCO and counter electrodes in the development of WO<sub>3</sub>-based ECDs with conducting polymer electrolytes. © 2023 by the authors.

## **The impact of Covid-19 and Russia–Ukraine war on the financial asset volatility: Evidence from equity, cryptocurrency and alternative assets**

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6

This study investigates the volatility and external shock persistence within the financial and alternative assets markets during times of crises triggered by Covid-19 and the war in Ukraine. Univariate GARCH family models are used to capture the effect of financial turmoil caused by recent crises. Five different class of assets (which includes Islamic, ESG, Conventional, Crypto, FinTech, and commodities) have been chosen to represent a sample of the worldwide traditional financial market and alternative assets. The findings of this study revealed that almost all financial and alternative assets experienced an increase in volatility, except Bitcoin, across all observation periods. Islamic stock and ESG indexes exhibited high volatility before the Covid-19 outbreak. During the pandemic, all assets became more volatile. In addition, Islamic equities and ESG indexes showed relatively lower risk compared to conventional stocks and other alternative assets during the war. Multiple financial assets tend to be highly volatile during crises; however, global investors need to consider the advantages of incorporating Islamic stocks and ESG indexes as part of their investment portfolio innovation strategy, particularly in the presence of geopolitical risk. © 2023 The Authors

## **The Impact of COVID-19 on the Energy Sector and the Role of AI: An Analytical Review on Pre- to Post-Pandemic Perspectives**

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The COVID-19 pandemic has disrupted global energy markets and caused significant socio-economic impacts worldwide, including the energy sector due to lockdowns and restricted economic activity. This paper presents a comprehensive and analytical review of the impact of COVID-19 on the energy sector and explores the potential role of artificial intelligence (AI) in mitigating its effects. This review examines the changes in energy demand patterns during the pre-, mid-, and post-pandemic periods, analyzing their implications for the energy industries, including policymaking, communication, digital technology, energy conversion, the environment, energy markets, and power systems. Additionally, we explore how AI can enhance energy efficiency, optimize energy use, and reduce energy wastage. The potential of AI in developing sustainable energy systems is discussed, along with the challenges it poses in the energy sector's response to the pandemic. The recommendations for AI applications in the energy sector for the transition to a more sustainable energy future, with examples drawn from previous successful studies, are outlined. Information corroborated in this review is expected to provide important guidelines for crafting future research areas and directions in preparing the energy sector for any unforeseen circumstances or pandemic-like situations. © 2023 by the authors.

## **The Impact of Marketing Innovation on Economic Development in Nigeria: A Literature Review**

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Marketing innovation is one of the keys to increasing a nation's economy. It is said that economic growth is an increase in national output that leads to a rise in the average per capita GDP. Additionally, increasing the average per capita GNP is insufficient to convey the implied or predicted value of economic growth. (World situation) Marketing innovation is becoming more intense towards the economic development in Nigeria. It is to be noted that there is a distinct lack of literature on the effect of marketing innovations on Nigeria's economic growth. While the country's economic growth has improved, it has not been evenly distributed. Since business activity appears to decide the degree of economic growth in each society, marketing innovation becomes an indicator of economic development. (Nigeria situation) The article review aimed to look at previous research on the effect of marketing innovation on Nigeria's economic growth. Natural resources aren't enough for Nigeria to compete, as shown by the pattern and descriptions provided. As a result, this study suggests that marketing innovation be viewed as a primary driver of Nigeria's economic growth. Government and private sector efforts can therefore be made to invest in human capital creation and R&D to generate the ground power for exponential growth. In addition, this study also focused on the main findings of each study conducted. This study also examines the methodology of the study used. The findings of this study are intended to help future researchers research the impact of marketing innovation on economic development in Nigeria. In addition, this analysis indicates several research topics for future study. © 2023, Success Culture Press. All rights reserved.

## The Implications Of Knowledge- based HRM Practices On Open Innovations For SMEs In The Manufacturing Sector

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DOI: 10.28945/5162

**Aim/Purpose** The main aim of this study was to investigate the impact of knowledge-based Human Resources Management (HRM) practices on inbound and outbound open innovation in Jordanian small and medium enterprises (SMEs). **Background** SMEs in Jordan lack tangible resources. This insufficiency can be remedied by using knowledge as a resource. According to the Knowledge-Based View (KBV) theory, which posits knowledge as the most valuable resource, SMEs can achieve open innovation by implementing knowledge-based HRM practices that enhance the utilization of knowledge and yield competitiveness. **Methodology** This study adopted the quantitative method employing descriptive and exploratory approaches. A total of 500 Jordanian manufacturing SMEs were selected from 2,310 manufacturing SMEs registered lists, according to the Jordan Social Security, by using random sampling. The study's instrument was a questionnaire that was applied to these SMEs. There were 335 responses that were deemed useful for analysis after filtering out the replies with missing values; this corresponded to a response rate of 67%. The paper utilized structural equation modeling and cross-sectional design to test hypotheses in the proposed research model. **Contribution** This study advocates the assumption of the role of KBV in improving innovation practices. This study contributes to the existing strategic HRM research by extending the understanding of knowledge-based HRM practices in the context of SMEs. Thus, this study contributes to the understanding of innovation management by demonstrating the role of knowledge-based HRM practices in boosting inbound and outbound OI practices, thereby enhancing innovation as an essential component of firm competitiveness. **Findings** The findings revealed the positive impact of four knowledge-based HRM practices on inbound and outbound open innovation in Jordanian manufacturing SMEs. These practices were knowledge-based recruitment and selection, knowledge-based training and development, knowledge-based compensation and reward, as well as knowledge-based performance assessment. **Recommendations for Practitioners** This study is expected to help the stakeholders of SMEs to re-shape the traditional HRM practices into knowledge-based practices which improve managerial skills, innovation practices, and the level of the firm's competitiveness. **Recommendations for Researchers** This study serves as a significant contribution to the research field of innovation practices by building a new association between knowledge-based HRM practices and inbound and outbound open innovation. **Impact on Society** The study emphasizes the vital role of knowledge-based HRM practices in enhancing the knowledge and social skills of the human capital in SMEs in Jordan, thus improving the country's social and economic development. **Future Research** Future research could build on this study to include service SMEs. It could also employ a longitudinal study over the long run which would allow for a deeper analysis of the relationships of causality, offering a more comprehensive view of the effect of knowledge-based HRM on open innovation. Furthermore, future research could examine the sample of investigation before and after implementing the knowledge-based HRM practices to provide stronger evidence of their influence on inbound and outbound innovation. © 2023 Informing Science Institute. All rights reserved.

## **The interplay among paradoxical leadership, industry 4.0 technologies, organisational ambidexterity, strategic flexibility and corporate sustainable performance in manufacturing SMEs of Malaysia**

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Islam M.T.; Valeri M.

DOI: 10.1108/EBR-04-2023-0109

**Purpose:** Manufacturing firms must embrace smart technologies and develop complex leadership approaches to achieve sustainability. Using the dynamic capability theory, this paper aims to examine the influence of the adoption of industry 4.0 technologies (AT) and paradoxical leadership (PL) on corporate sustainable performance (CSP) of manufacturing small-medium enterprises (SMEs) in Malaysia. Moreover, organisational ambidexterity (OA) is a mediator and strategic flexibility (SF) is a moderator in the study. **Design/methodology/approach:** The study is a cross-sectional, quantitative study design that collected 395 usable responses through a simple random sampling technique and a close-ended structured questionnaire. Structural equation modelling (SEM) procedures were followed to analyse the data. **Findings:** The statistical outcome implies that the AT significantly influence CSP and OA and mediate with CSP in the presence of OA. Moreover, PL shows a significant impact on OA, is insignificant on CSP and mediates with OA and CSP. The authors found a significant association between OA and CSP; however, SF did not provide evidence of a moderate effect. **Research limitations/implications:** The findings of this study clarify the role that organisational capabilities (OA, AT, PL and SF) play in fostering sustainability. The authors suggest incorporating SMEs from different geographies in other sectors by applying diverse methodologies and relevant constructs. **Practical implications:** The result injects new perspectives into policy, managerial and individual levels. Installing OA, AT, PL and SF makes SMEs sustainable. **Originality/value:** The empirical validation of the influence of OA and AT on CSP and the interaction of PL and SF enriches the organisational and entrepreneurial literature. © 2023, Emerald Publishing Limited.

## **The latest innovative avenues for the utilization of artificial Intelligence and big data analytics in water resource management**

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The effective management of water resources is essential to environmental stewardship and sustainable development. Traditional approaches to water resource management (WRM) struggle with real-time data acquisition, effective data analysis, and intelligent decision-making. To address these challenges, innovative solutions are required. Artificial Intelligence (AI) and Big Data Analytics (BDA) are at the forefront and have the potential to revolutionize the way water resources are managed. This paper reviews the current applications of AI and BDA in WRM, highlighting their capacity to overcome existing limitations. It includes the investigation of AI technologies, such as machine learning and deep learning, and their diverse applications to water quality monitoring, water allocation, and water demand forecasting. In addition, the review explores the role of BDA in the management of water resources, elaborating on the various data sources that can be used, such as remote sensing, IoT devices, and social media. In conclusion, the study synthesizes key insights and outlines prospective directions for leveraging AI and BDA for optimal water resource allocation. © 2023 The Authors

## **The Mediating Role of Parasocial Interaction in the Relationship Between Loneliness and Netflix Binge-Watching Tendencies: A Case Study of Malaysian University Students during the COVID-19 Pandemic**

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2023-3904-28

Streaming services such as Netflix are already penetrating the mainstream market in Malaysia. Netflix offers a wide range of binge-worthy content to young adults, such as K-dramas, anime, thrillers, rom-coms, sitcoms, or reality television shows. As a newer form of media engagement, media researchers are just beginning to understand the meaning of binge-watching, and how motivation to binge-watch (MBW) predicts binge-watching tendencies (BWT). Research on parasocial relationships formed with Netflix characters and how they influence BWT is also relatively scarce. Thus, we seek to identify predictors of BWT from the uses and gratification (U&G) perspective. We predict that parasocial interaction (PSI) will mediate the relationship between loneliness and binge-watching tendencies (BWT). Six hypotheses were tested using zero-order correlations and PROCESS Macro Hayes. A cross-sectional online survey was constructed using Google Forms, and distributed among university students in Malaysia during the COVID-19 pandemic (N = 284). Data was collected from October to December 2021. Four hypotheses were supported; results indicate that PSI, stress relief, and enjoyment predicted BWT. PSI also mediated the relationship between loneliness and BWT. Thus, parasocial relationships formed with Netflix characters prompted lonelier individuals to binge-watch more. The repercussions of these findings on U&G, PSI, and binge-watching literature will be discussed. © 2023, Penerbit Universiti Kebangsaan Malaysia. All rights reserved.

## **Towards carbon-neutral world: The effect of renewable energy investments and technologies in G7 countries**

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Can renewable energy investments and technologies help achieve carbon neutrality goals? The answer to this question has been neglected until now due to a lack of data. The novelty of this study lies in its exploration of the influence of renewable energy investments and renewable energy technologies on reducing petroleum-derived carbon emissions for the first time in the Group of seven (G7) countries. An additional novel aspect of the study is to discuss how governance indicators, such as regulatory quality, political stability, and democracy, can influence the carbon neutrality targets of the G7 nations. To this end, the study applies second-generation panel data methods, such as the cross-sectionally augmented Dickey-Fuller unit root test, the Durbin-Hausmann panel cointegration test, and the panel augmented mean group estimator. The findings illustrate that renewable energy investments and technologies help reduce carbon emissions in different models. Additionally, while economic growth is beneficial to the environment, governance indicators have no effect on carbon emissions. Overall, the outcomes suggest that G7 countries should increase their investments in renewable energy and support clean technologies to achieve their carbon neutral targets. The study also points out that reducing oil consumption by promoting renewable energy technologies and investments is a critical step toward carbon neutrality for G7 policymakers. © 2023 Elsevier Ltd

## Vehicle Localization Based On IMU, OBD2, and GNSS Sensor Fusion Using Extended Kalman Filter

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Multiple systems have been developed to identify drivers' drowsiness. Among all, the vehicle-based driver drowsiness detection system relies on lane lines to determine the lateral position of the vehicle for drowsiness detection. However, the lane lines may fade out, affecting its reliability. To resolve this issue, a vehicle localization algorithm based on the Inertial Measurement Unit (IMU), Global Navigation Satellite System (GNSS), and Onboard Diagnostics (OBD2) sensors is introduced. Initially, the kinematic bicycle model estimates the vehicle motion by using inputs from the OBD2 and IMU. Subsequently, the GNSS measurement is used to update the vehicle motion by applying the extended Kalman filter. To evaluate the algorithm's performance, the tests were conducted at the residential area in Bukit Beruang, Melaka and Multimedia University Melaka Campus. The results showed that the proposed technique achieved a total root-mean-square error of 3.892 m. The extended Kalman filter also successfully reduced the drift error by 40 – 60%. Nevertheless, the extended Kalman filter suffers from the linearization error. It is recommended to employ the error-state extended Kalman filter to minimize the error. Besides, the kinematic bicycle model only generates accurate predictions at low vehicle speeds due to the assumption of zero tire slip angles. The dynamic bicycle model can be utilized to handle high-speed driving scenarios. It is also advised to integrate the LiDAR sensor since it offers supplementary position measurements, particularly in GNSS-denied environments. Lastly, the proposed technique is expected to enhance the reliability of the vehicle-based system and reduce the risk of accidents. © (2023), (Faculty of Engineering, Universitas Indonesia). All Rights Reserved.

## Structural Equation Modeling of Right-Turn Motorists at Unsignalized Intersections: Road Safety Perspectives

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This study aims to determine traffic behavior at the selected unsignalized intersection and the development of right-turn motorists (RTM) by adopting the logistic regression method (LRM) and structural equation modelling (SEM). In the early stage of the study, we analyzed the traffic behavior focusing on traffic volume and turning volume at the field site. This study involves five unsignalized intersections (UI), and it observes three types of turning volume: right turn volume (RTV) from a minor road onto a major road, left turn volume (LTV) from a minor road onto a major road, and right turn volume (RTV) from a major road onto a minor road. Although the SEM approach is among the popular scientific analysis and wisely applied in various fields of study, there is less attention to traffic behavior and road safety. An SEM model was developed for right-turn motorists using 812 datasets was developed, and variables that influenced the decision of right-turn motorists (RTM) were identified. Among the six variables analyzed in this statistical model, we identified gap, motorcycle rider, conflict lane change, and the traffic signal to be significant. © (2023), (Faculty of Engineering, Universitas Indonesia). All Rights Reserved.

## **Transforming Supply Chains: Powering Circular Economy with Analytics, Integration and Flexibility Using Dual Theory and Deep Learning with PLS-SEM-ANN Analysis**

Shafique M.N.; Rashid A.;  
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DOI: 10.3390/su151511979

The Sustainable Development Goals and circular economy are two critical aspects of the 2030 Agenda for Sustainable Development. They both seek to reduce the waste of natural resources and enhance society's social, economic, and environmental goals. This study aims to identify, develop, test, and verify the significant antecedents that affect the adoption of supply chain analytics and its consequences for achieving the circular economy. We have divided the conceptual framework into two parts. In the first part, the relationship among data integration and scalability, organizational readiness, and policies and regulations as Technological–Organizational–Environmental factors as antecedents in adopting supply chain analytics. In the second part, the dynamic capabilities view grounded the relationship among supply chain analytics, supply chain integration, and sustainable supply chain flexibility effect directly and indirectly on the circular economy. Data have been collected using the survey method from 231 respondents from the manufacturing industry in Pakistan. Data have been analyzed using (i) partial least square structure equation modeling (ii) and artificial neural network approaches. The empirical findings proved that antecedents (data integrity and scalability, organizational readiness, and policy and regulation) and consequences (supply chain integration and sustainable supply chain flexibility) of supply chain analytics adoption would improve the circular economy performance. Additionally, artificial neural networks have supported these relationships. The adoption of supply chain analytics will enable organizations to supply chain integration. Additionally, organizations with more integration and analytics in their operations tend to have more flexibility and a circular economy. Moreover, organizations and society will obtain social, economic, and environmental benefits and reduce wastage and negative environmental impacts. © 2023 by the authors.

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## **The Role of Polymers in Halide Perovskite Resistive Switching Devices**

Thien G.S.H.; Chan K.-Y.;  
Marlinda A.R.

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Currently, halide perovskites (HPs) are gaining traction in multiple applications, such as photovoltaics and resistive switching (RS) devices. In RS devices, the high electrical conductivity, tunable bandgap, good stability, and low-cost synthesis and processing make HPs promising as active layers. Additionally, the use of polymers in improving the RS properties of lead (Pb) and Pb-free HP devices was described in several recent reports. Thus, this review explored the in-depth role of polymers in optimizing HP RS devices. In this review, the effect of polymers on the ON/OFF ratio, retention, and endurance properties was successfully investigated. The polymers were discovered to be commonly utilized as passivation layers, charge transfer enhancement, and composite materials. Hence, further HP RS improvement integrated with polymers revealed promising approaches to delivering efficient memory devices. Based on the review, detailed insights into the significance of polymers in producing high-performance RS device technology were effectively understood. © 2023 by the authors.

## Virtual Reality Vehicle Inspection Routine (VR-VIR): Evaluation of Technology Acceptance

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This paper proposes a Virtual Reality Vehicle Inspection Routine (VR-VIR) simulation application that teaches students how to perform vehicle inspections, also known as “Rutin Pemeriksaan Kendaraan” in Malaysia, which drivers must learn before obtaining a Malaysian driver’s license. The goal of VR-VIR is to provide students with a fresh perspective on learning the vehicle inspection routine module to ensure their vehicle’s safety on the road. Users can learn about vehicle inspection routines in a more informative and hands-on manner through the VR-VIR, supplementing existing methods of learning such as books or videos. Users who have never performed vehicle inspections before or are unsure how to do so properly can practice in a safe virtual setting during and post-pandemic. Virtual Reality (VR) is widely used in various fields to aid learning in the virtual world. Many scholars engaged with the Technology Acceptance Model (TAM) to explore user acceptance of new technology. However, there are limited studies on evaluating user acceptance for vehicle inspection routines through VR using TAM. Thus, this research aims to investigate how the VR-VIR affects user acceptance. Davis’s TAM final version was used to assess how the VR-VIR was accepted based on elements of perceived ease of use (PEU), perceived usefulness (PU), and behavioral intention (BI). The 28 respondents evaluated the VR-VIR and answered questionnaires through a simple random sampling method. Three experts in IT and VR were involved in VR-VIR construct validation and design evaluation. Data analysis is on descriptive and correlation analysis using SPSS 26.0. The findings showed positive responses from users with medium and high values on PEU (mean = 4.04), PU (mean = 3.72), and BI (mean = 3.30). Experts’ findings also indicated medium and high values in PEU (mean = 3.67), PU (mean = 3.92), and BI (mean = 4.00). The findings on correlation analysis for Hypothesis (H1, H2, and H3) found the correlation coefficient ( $r$ ) is significant with a value of  $r > 0.50$ , indicating PEU ( $r = 0.63$ ), PU ( $r = 0.59$ ) and BI ( $r = 0.63$ ) have a strong correlation. Thus, all hypotheses are accepted. The study proved that VR-VIR is accepted by users and can assist them in learning vehicle inspection routines. This research contributes to the vehicle inspection routine in VR transport field, as a virtual learning tool for experiencing the vehicle inspection process. This study can be enhanced by improvements in interaction and application design. © 2023, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.



## Vision-Based PM<sub>2.5</sub> Concentration Estimation With Natural Scene Statistical Analysis

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As the primary pollutant in China's urban atmosphere, PM<sub>2.5</sub> poses a great threat to the health of residents and ecological stability. Efficient and effective PM<sub>2.5</sub> concentration monitoring is essential. Nonetheless, the popular devices for PM<sub>2.5</sub> monitoring are developed based on two standards: the micro-oscillation balance method and the  $\beta$ -ray method, which have high purchase and maintenance costs and slow calculation rates. To this end, we put forward a real-time and reliable vision-based estimation algorithm of PM<sub>2.5</sub> concentration. To be specific, the proposed method first develops two natural scene statistical analysis-based visual priors to measure saturation and structural information losses caused by the 'haze'; formed by PM<sub>2.5</sub>. Moreover, we develop a lightweight deep belief network (DBN)-deep neural network (DNN)-based PM<sub>2.5</sub> concentration estimation model, which learns the mapping from the designed visual priors to PM<sub>2.5</sub> concentrations. Experiments confirm the superiority of our vision-based PM<sub>2.5</sub> concentration estimation method by comparison with state-of-the-art photo-based PM<sub>2.5</sub> monitoring methods. IEEE

## **Was short selling embraced by participants in an emerging market during the COVID-19 pandemic?**

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DOI:  
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The COVID-19 pandemic has put the financial system under considerable strain and triggered an unprecedented reaction in the financial market. To promote financial stability and strengthen the Malaysian financial market, the authorities banned regulated short selling activities in March 2020 and subsequently lifted the ban in January 2021. This study objectively examines the stock price reactions toward regulated short selling activities announcements and documents the most recent empirical study which examines the short selling related announcements in the emerging market. There are differing opinions on stock price reactions regarding short selling announcements, so to examine the stock price reactions, the event study methodology was employed. The event window for this study is -15 days, 0 (announcement day), +15 days. Interestingly, the findings showed that the stock prices responded negatively to the ban of regulated short selling activities and responded positively to the removal of the ban. This study supports the downward biased hypothesis which implies that the Malaysian market participants welcome regulated short selling activities. © 2023 Asian Economic and Social Society. All rights reserved.

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## **When Corporate Social Responsibility Pays Off: The Power of Effective Communication for Customer Satisfaction**

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The petroleum industry produces both toxic and non-toxic wastes at almost all stages of production. While petroleum companies satisfy market demand, they also want to meet consumers' moral and ethical demands. Hence, CSR has become vital for the development of the companies as a whole. While CSR initiatives have the potential to bring many benefits to any business, their impact on customer satisfaction has remained a mystery. This study sets out to explore how petroleum companies can harness the full potential of CSR to communicate, integrate, and organize their projects effectively through CSR implementation to uncover how it can significantly boost customer satisfaction in Malaysian petroleum companies. Drawing on the latest insights from the Theory of CSR, Stakeholder Theory, and Social Influence Theory, this study takes a quantitative approach to fill crucial gaps in the CSR literature and provide valuable insights into the links between CSR activities and consumer behavior. 6 hypotheses were established for the activities and CSR Mechanisms on customer satisfaction. The research model was tested using Structural equation modeling of partial least square with the SmartPLS 3.0 software. The findings of this research can directly contribute to good management practices as the study can help managers appreciate how consumers understand the company's CSR initiatives and the effect it has on customer satisfaction. Hence, this research can help build responsible managers. © (2023), (Faculty of Engineering, Universitas Indonesia). All Rights Reserved.

## **Women on boards, firms' competitive advantage and its effect on ESG disclosure in Malaysia**

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0151

**Purpose:** The purpose of this paper is to investigate the effects of women on board moderated by firms' competitive advantage on firms' environmental, social and governance (ESG) disclosures. **Design/methodology/approach:** The sample consists of 332 firm-year observations from the year 2012 to 2017 of 65 firms listed in Bursa Malaysia. To improve the robustness of this analysis, the authors adopt clustering techniques in the regression analysis. Sensitivity analysis is also conducted using two-stage least square regression and robust standard errors for panel regression with a cross-sectional dependence approach. **Findings:** The findings of this research indicate that women on board encourage ESG and environmental disclosures. Nonetheless, in competitively advantaged firms, the authors find that the interaction between WOMENPER and COMADVANTAGE is negatively influencing ESG scores. However, no evidence is found to indicate that women on board in a competitively advantaged firm have an effect on the environmental scores of a firm. **Research limitations/implications:** The findings urge regulators to ensure the appointment of qualified and competent women on board, particularly in competitively advantage firms. **Practical implications:** Though firms with more women on board are associated with better ESG disclosures and environmental disclosures, the author's additional analysis found that this is less pronounced in competitively advantage firms. Since a number of the competitive firms are owned by family firms as well as government-linked firms, the appointment of women should not be based on directors' affiliation, network and family relationships. **Originality/value:** To the best of authors' knowledge, this is one of the few studies which seek to investigate women's appointment in competitive advantage firms. © 2022, Emerald Publishing Limited.


## **Workplace Wellness, Mental Health Literacy, and Usage Intention of E-Mental Health amongst Digital Workers during the COVID-19 Pandemic**

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4

The prevalence of mental health problems in both Malaysian and global workplaces has significantly increased due to the presence of the coronavirus disease (COVID-19) pandemic, globalization, technology advancement in Industry 4.0, and other contributing factors. The pervasiveness of the issue poses a huge challenge to improving the occupational safety and health (OSH) of workers in various industries, especially in the digital industry. The emergence of the innovative industry is evident mainly due to the rapid development of Industry 4.0 and the relevant demands of multiple businesses in the digital transformation. Nonetheless, limited studies and academic discussions were conducted on the OSH topic of digital employees. Hence, the current study serves to fill the existing gap and provide academic contributions by scrutinising the perceptions of digital workers regarding their workplace well-being, mental health literacy, and the impression of employing e-mental health. The objectives of this study are: 1) To examine the mental health literacy and workplace wellness of digital workers, 2) to explore the e-mental health usage intention and actual e-mental health utilization, and 3) to identify digital workers' feedback on e-mental health. In the current context, e-mental health focuses on three dimensions, namely, 1) "health in our hand (HIOH)", 2) "interacting for health (IFH)", and 3) "data enabling health (DEH)". The present study employed an online cross-sectional survey and received 326 digital workers' completed responses. Variables, such as "mental health literacy (MHL)", "workplace wellness (WW)", and e-mental health intention and usage were explicated by analysing the data through descriptive statistics. The study results indicated a moderate to a high level of the MHL and the WW. More than half of the workers possessed a high intention level to employ e-mental health, with the HIOH dimension being the most prevalent domain. Nevertheless, the actual e-mental health usage was very low, owing to the online resources being a new concept amongst digital employees. Numerous confounding factors also existed in affecting the low usage, such as privacy concerns, data security levels, and health verification issues. In addition, the mental health issue has not been openly and widely discussed in Malaysian workplaces due to stigmatisation. As such, the current findings could provide additional insights into the OSH literature; it could serve as a guideline for the OSH decision-makers, employers, and eHealth developers when establishing a feasible framework for the practical adoption of e-mental health services by digital workers. © 2023, Tech Science Press. All rights reserved.



A photograph of a cityscape at sunset. The sky is a mix of orange, yellow, and blue. In the foreground, a construction crane is visible, and a large building is under construction, partially covered in green scaffolding. Other buildings are visible in the background.

“ We must understand that the ultimate purpose of development is to improve human well-being, which requires transforming our economies and societies so that they become more sustainable and equitable ”

Christiana Figueres,  
former Executive Secretary of the UN Framework  
Convention on Climate Change





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