Organised by: Co-Organised by: Supported by:

75th anniversary Technological Association Malaysia Conference

Innovations in Engineering Technology 2022 (iTech 2022): Beyond COVID-19

The Ship Campus, Batu Kawan, Penang

23 April 2022

CONTENT

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ABOUT THE CONFERENCE

The vibrant industrial sector, recognised as the important source of technological progress worldwide, is acknowledged as the leader in the implementation of the latest technology all aimed towards further efficient production and society lifestyle enrichment. Contributions of the industrial sector are thus the vital catalyst of any country worldwide striving for industrialised and developed nation status. With the quantum technological leap into the exciting era of Industry 4.0 (cyber-physical systems), the industry worldwide needs to evolve forward quickly via acquiring cutting-edge knowledge, skills and innovative practices to stay competitive whilst sustaining the growth momentum of this economic sector. This ingenious era of Industry 4.0 is very promising and has opened up unlimited business and technological opportunities within Malaysia and worldwide. Cost-effective top trending and Industry 4.0 technologies combined with resourceful work practices aims to create the best and most efficient production of quality products to further optimise overall production costs and enhancing good governance towards sustainability for the industry worldwide.

The theme for this year's high-profile technological conference and exhibition during this vibrant Industry 4.0 era is 'Innovations in Technology (iTech 2022)'. Industry 4.0, namely the age of cyber-physical systems; combines advanced production and operations techniques with smart digital technologies. This innovative technology also allows real-time access to large data sets that is used for detailed analysis to drive intelligent outcomes for more efficient and cost-effective management decision making. This digital reality transformation era can also alter the rules of production, operations and workforce management for the respective industrial sectors worldwide. This timely technology-centred conference will focus on the incentives required for the next technology leap, top trending technologies worldwide complemented by the benefits and practical applications of Industry 4.0 and other innovative technologies towards further strategic industrial progress for any aspiring country worldwide striving for world-class industrialised status.

Based on the outstanding track record and strong support of the Government and industry towards technological progress and society lifestyle enhancement; this year's iTech 2022 Technological Conference is definitely going to be another Great Success to further advance the nation, industrial sector and the community to another level of world-class excellence. Innovative and practical top trending and Industry 4.0 digital transformation technology and economic practices would be another global asset in transforming the existing work practices in the already dynamic industrial sector towards even greater strategic excellence and more efficient production of all the respective industrial sectors worldwide.

Highlights of the pioneering top trending and Industry 4.0 technology and economic applications useful for the global industrial sectors planned for presentation at the upcoming iTech 2022 Conference include 'Incentives for Industrial Implementation of Innovative Technologies', 'Top Trending Technologies Worldwide', 'Smart Applications of Industry 4.0', 'Benefits of 5G Technology', 'Advances and Applications of Drone Technology', 'Smart Traffic Management', 'Industry 4.0 Building Technology', 'Efficient Smart Flood Mitigation', 'Innovative Artificial Intelligence (AI) Technology' complemented with iTech 2022 Conference parallel sessions on 'Technology and the Environment' and 'Technology and Education'.

With so many innovative and top trending Innovative 4.0 technology topics for presentation at iTech 2022, this high-status event is definitely the de-facto technological conference for all directly and indirectly contributing towards the successful and continuous progress of this prestigious economic sector.

THE OBJECTIVES

The main objective of iTech 2022 is to allow the various government departments & agencies, industry captains, equipment manufacturers, academia, research institutes and the industry establish a high-profile expert platform to present the latest state-of-the-art innovative technologies and success stories; and to network at the local and international level to further progress the industry to world-class status - a 'win-win' scenario for all.

OPENING CEREMONY

75th Anniversary Celebration of Technological Association Malaysia Conference Innovations in Technology (*iTech 2022*)

Venue: The Opera Theatre

8:00am – 9:00am	Registration
9:00am – 9:10am	Welcoming Remarks by EMCEE National Anthem Penang State Anthem
9:10am – 9:15am	Welcoming Remarks by Ir. Ting Chek Choon Chairman of iTech 2022 Local Organising Committee (LOC)
9:15am – 9:20am	Welcoming Address by Ts. Ir. Yam Teong Sian President of Technological Association Malaysia (TAM)
9:20am – 9:30am	Official Opening Address by YAB. Tuan Chow Kon Yeow Chief Minister of Penang
	TAM Commemorative Book Launching
9:30am – 9:40am	Presentation of Token of Appreciation
9:40am – 9:45am	Malaysia Book of Record Presentation by Dato' Seri (Dr.) Michael Tio Chief Executive Officer, The MALAYSIA Book of Records (MBR)
9:45am – 11:00am	Booths Visit & Networking
	Coffee Break (Level 4)

PROGRAMME

75th Anniversary Celebration of Technological Association Malaysia Conference Innovations in Technology (*iTech 2022*)

Venue: The Compass Room, Level 2

Moderator: Dato Prof. Dr. Ir. Ts. Eric Goh Kok Hoe

11:00am – 11:30am	**Keynote Paper 1: Managing Technology Through to a Commercial Success – Is Technological Innovation Enough?** Speaker: Prof. Dr. Ian Pashby
11:30am – 11:50am	**Paper 1: 5G Roll-out – Challenges and Hidden Opportunities** Speaker: Dr. Wong Peng Wen
11:50am – 12:10pm	**Paper 2: Ways Drone Technology is Impacting the Business World** Speaker: Mr. Lim Guang Ming
12:10pm – 12:30pm	**Paper 3: Transformation Innovations & Digitalization impact on Existing Legacy Systems** Speaker: Mr. Allen Ho
12:30pm – 12:50pm	**Paper 4: Aviation and Technology** Speaker: Ts. R. Karnanethe
12:50pm – 1:00pm	**Q&A**
1:00pm – 2:30pm	**Lunch (Industrial Networking)**
	Moderator: Ir. Dr. Lee Choo Yong
2:30pm – 3:00pm	**Keynote Paper 2: Top Trending Technologies Worldwide** Speaker: Dato Prof. Dr. Ir. Ts. Eric Goh Kok Hoe
3:00pm – 3:20pm	**Paper 5: Temporary Works and Construction Method Engineering** Speaker: Ts. Louis Tay Chee Siong
3:20pm – 3:40pm	**Paper 6: BIM Based Digital Twin – Beyond Design & Construction Meeting ESG Standards and FM** Speaker: Mr. Mehmood Zeb
3:40pm – 4:00pm	**Paper 7: Smart Traffic Light** Speakers: Dr. Ang Sau Loong & Mr. Cheah Jun Hong
4:00pm – 4:20pm	**Paper 8: Integrated Flood Management - Technological Advances for Malaysia** Speaker: Dato' Ir. Lim Chow Hock
4:20pm – 4:30pm	**Q&A**

PROGRAMME

75th Anniversary Celebration of Technological Association Malaysia Conference Innovations in Technology (*iTech 2022*)

Venue: Venue: Moscow Room, Level 3

Moderator: Ir. Ts. Dr. Tan Kim Seah

11:00am – 11:30am	**Keynote Paper 1 (The Compass Room, Level 1)**
11:30am – 11:50am	**Paper A1: Artificial Intelligence Application In Civil Engineering Construction** Speaker: Ts. Syahrul Fithry bin Senin
11:50am – 12:10pm	**Paper A2: Application of Remote Sensing and GIS for Flood Hazard Mapping** Speaker: Gs. Dr. Tan Mou Leong
12:10pm – 12:30pm	**Paper A3: Adoption of Building Information Modelling (BIM) for Construction 4.0 Technology in Malaysia** Speaker: Ts. Ir. Wong Chee Fui
12:30pm – 12:50pm	**Paper A4: GIS-Based Multi-Criteria Evaluation for Potential Inland Aquaculture Site Selection in the George Town Conurbation, Malaysia** Speaker: Gs. Dr. Mohd Amirul bin Mahamud
12:50pm – 1:00pm	**Q&A**
1:00pm – 2:30pm	**Lunch (Industrial Networking)**
	Moderator: Ir. Ts. Dr. Khor Jeen Ghee
2:30pm – 3:00pm	**Keynote Paper 2 (The Compass Room, Level 1)**
3:00pm – 3:20pm	**Paper A5: Innovations in Constructed Wetland System Design and Applications** Speaker: Dr. Goh Hui Weng
3:20pm – 3:40pm	**Paper A6: Determining The Effects of Risky Riding Behavior on Gap Acceptance of Right-Turning Motorcyclists from Minor Roads at T-Junctions** Speaker: Assoc. Prof. Ir. Ts. Dr. Leong Lee Vien
3:40pm – 4:00pm	**Paper A7: SCADA** Speaker: Ts. Tah Ai Sher
4:00pm – 4:20pm	**Paper A8: Application of Computational Fluid Dynamics in Free Surface Flow Problem** Speaker: Dr. Puay How Tion
4:20pm – 4:30pm	**Q&A**

Prof. Dr. Ian Pashby

Keynote Paper 1:
Managing Technology Through to a Commercial Success – Is Technological Innovation Enough?

Venue: The Compass Room, Level 2 **Time:** 11:00am – 11:30am

Professor Ian Robert Pashby graduated from the University of Sheffield (UK) with a bachelor's degree in Metallurgy and then worked in research and development for Rolls-Royce (aero engines). He joined the Warwick Manufacturing Group at the University of Warwick (UK) as a lecturer, was awarded his PhD for research in the processing of materials and subsequently promoted to Senior Lecturer. In 2000, he became Professor of Manufacturing Processes at the University of Nottingham (UK). Professor Pashby moved to the University of Nottingham's Malaysia Campus in 2007 to become Deputy Head. He became Pro-Vice Chancellor and then CEO of the campus in 2008. Returning to the UK in 2013, he became Pro-Vice Chancellor at the University of Hull (UK). He moved back to Malaysia in 2017 to lead the Peninsula Higher Education Group as its Group President.

Abstract:

There is much talk of innovation and technological advancement in the development of new products, but are these features always all that is needed for commercial success? This talk will examine, using examples, some of the barriers and determinants of commercially successful products.

In the United States alone 388,900 new patents were granted in 2020 and there were a total of 3.34 million active patents. How many of these will see there way to market in new products and what key features will determine which are the winners?

Dato' Prof. Dr. Ir. Ts. Eric Goh Kok Hoe

Keynote Paper 2:
Top Trending Technologies Worldwide

Venue: The Compass Room, Level 2 **Time:** 2:30pm – 3:00pm

Dato' Professor Ts. Ir. Dr. Eric Goh, Professor of Engineering attached to Universiti Sains Malaysia, has successfully completed his leadership term as Honorary Executive Director - Academy of Quarrying, State Branch Chairman - Institution of Engineers Malaysia (IEM-Pg), USM's Head of Quality and Accreditation and honorary contributions to various high-impact Editorial Boards/ Committees. As Engineering Accreditation Council's Delegation and Panel Head, he has also successfully co-accredited over 70 university academic programmes. Acknowledged as Malaysia's pioneer Mining & Quarrying (Mineral Resources) Professor nationwide with over 38 years extensive international and national academic, research and industrial work experience; Prof. Eric Goh has pro-actively promoted positive nation-building and was appointed as the Panel Expert to the Government, Project Coordinator for co-development of the Mineral Industry Development Master Plan which was finally approved by Parliament as Malaysia's National Mineral Policy (NMP2). Prof. Eric Goh is a prolific author of over 200 technical publications which includes 12 technology/ engineering reference books. He has also contributed as Expert Speaker for STEM/Technology/Engineering Education Seminars of benefit to over 1200 aspiring university students on Academic Excellence. In recognition of his expertise, he was nominated to 'Fellowship (FASc)' of the prestigious Academy of Sciences Malaysia, conferred the 'Dato'ship Award', recipient of Institute of Quarrying (UK)'s prestigious 'International Citation Award', 'ASEAN Federation of Engineering Organisations Honorary Membership Award', 'Staff Quality Award - Best Lecturer (Teaching Category)', 'Distinguished Engineer Award', 'Institute of Quarrying Malaysia's Award of Excellence', 'Distinguished Individual Award (International Category)' and 3 times awarded 'Excellent Service Award (APC)'. In 2018, he was selected for the Albert Nelson Marquis Lifetime Achievement Award (USA). In capacity building, he is accredited as a Certified Technical Course Trainer by the German-Malaysian Institute. Prof. Eric Goh is frequently invited as International Keynote Speaker and Visiting Professor, Invited Expert Speaker and Session Chairman/Moderator to over 200 conferences/seminars/courses worldwide.

Abstract:

Top trending technologies need to be innovative, efficient and achievable to produce positive outcomes aimed towards optimum performance and budget for all industrial operations worldwide. Cost-effective technologies should thus focus on overall holistic production schemes to enhance overall efficiency. With the new era of 'Cyber Physical Systems' (Industry 4.0), globalisation and Covid-19 challenges; the technological profession needs to acquire knowledge on the latest state-of-the-art top trending technologies to stay competitive. Community development research is usage of the best technological tools to solve critical global problems. Industry 5.0, the way forward, is the beneficial collaborative interaction of machines supporting employees as the centre of the efficient production process. This Keynote will discuss on global top trending innovative technologies, highlights of essential community development-centred research projects and concluding with Industry 5.0; all of which to give hope to everyone and any country aiming for sustainable economic, social and technological progress worldwide... a win-win scenario for all striving towards world class technological excellence.

Dr Wong Peng Wen

Paper 1:
5G Roll-out – Challenges and Hidden Opportunities

Venue: The Compass Room, Level 2 **Time:** 11:30am – 11:50am

Dr Wong Peng Wen (Senior Member, IEEE) received the B.Eng. degree (Hons.) in electrical and electronic engineering from the University of Leeds, in 2005, and the Ph.D. degree from the University of Leeds, U.K., in 2009.,During the Ph.D. degree, he was involved in a U.K. DTI-funded project developing process design kits for multilayer system-in-package modules. He was fully funded by the U.K. Ministry of Defense through the DTC Program. He worked as an Associate Professor with the Petronas University of Technology, Perak, Malaysia from 2010-2019. From 2019-2021, he was with Huawei Sweden and worked as Principal Engineer and Program Manager, leading 5G research team for the development of next generation 5G massive MIMO base station. He received 2019 Future Star Award and Individual Performance Award 2020 from Huawei Sweden. Currently he is the CEO of FILPAL SDN BHD, focussing on RF software, product design and training. He is also the CTO of STARWAVE SDN BHD, a company offering RF product manufacturing services. Dr. Wong is also an Associate Fellow of the AAET. He has served as an invited speaker locally and internationally including at APMC 2017 and a keynote speaker at ICCSP 2017. He is currently an Advisor of the IEEE Penang Joint Chapter. He has served as the Technical Chair for IMESS 2017 and 2018. He was the Former Chair of the IEEE ED/MTT/SSC Penang Chapter, from 2016 to 2017. He was the Founding Chair of the IEEE International Microwave, Electron Devices, and Solid-State Symposium (IMESS), in 2016. He serves as a Reviewer for the IEEE Transactions on Microwave Theory and Techniques, the IEEE Microwave and Wireless Components Letters, IET Microwaves, Antennas & Propagation.

Abstract:

This talk discusses the challenges of 5G roll-out in various aspects as well as highlighting the obstacles in deployment. Some hidden opportunities which are not well understood by the public will also be discussed.

Mr. Lim Guang Ming

Paper 2:
Ways Drone Technology is Impacting the Business World

Venue: The Compass Room, Level 2 **Time:** 11:50am – 12:10pm

As the Chief Remote Pilot of Drone Academy Asia – Malaysia's First Approved Remote Pilot Training Organisation by the Civil Aviation Authority of Malaysia (CAAM), he has been a key developer of Unmanned Aircraft System Training pedagogies, setting the training standards in Malaysia. Through his in-field and operational knowledge, he is able to transfer his experiences to his trainees and clients. Along with that, he has reached out and provided technical knowledge and has assisted numerous organisations on their use of drones for a cross section of purposes including Agriculture, Surveying and Construction. Guang Ming is highly passionate and enthusiastic about ways innovation and engineering are vital to achieving a sustainable future. Guang Ming holds a First-Class Honours Bachelor Degree in Aerospace Engineering (Hons.) from Universiti Sains Malaysia (USM) and is also an Authorised Examiner approved by the Civil Aviation Authority of Malaysia.

Abstract:

The ongoing COVID-19 pandemic has caused significant disruptions on businesses, causing anything from enormous remote-work shifts to supply-chain problems worldwide. With limited in-person travel and interactions, there has been a growth in using drones by businesses across the world. Besides using drones for COVID-19 response, businesses have invested in drones for remote asset inspections and using drones to reduce labour in the agriculture and surveying sector. We would look at successful Drone-Powered Business Solutions by organisations that have expertly prototyped and fully adapted drone technology as an effective tool in various sectors, concentrating on the drone strategy and its practical implementation in day-to-day operations, including explaining the current drone regulations in the Malaysian landscape. The presentation will also discuss current technology limitations and critical technological advancements within the drone industry.

Mr. Allen Ho

Paper 3:
IR4.0's Transformation Innovations & Digitalization Impact on Existing Legacy Systems

Venue: The Compass Room, Level 2 **Time:** 12:10pm – 12:30pm

Mr Allen Ho, is the President of Global Markets, Reconova Technologies Co. Ltd of China. He is also the General Manager of AIRI Global Sdn Bhd, a Malaysian registered company. Both companies provide the industry with leading images intelligent analysis products and solutions. They are committed to continuous technological innovation in the field of intelligent video surveillance, terminal and intelligent retails. The core R & D team of Reconova is composed of computer vision and artificial intelligence experts from USA Silicon Valley.

As an industry-leading core technology of machine learning and computer vision, Reconova has developed a number of image recognition technologies and video intelligent analysis products. Reconova has also established very close cooperation with the artificial intelligence laboratory of Stanford University, and are committed to develop a world-leading intelligent perception technology and products. Examples of product and service focused by Mr Ho are 'Face Recognition' and 'High tech weapon with RFID system'.

Abstract:

The serious ripple effects of COVID pandemic are impacting on all Malaysia businesses with speed and magnitude, exposing their multiple weak links. How will businesses recover and sustain in this new reality: business as usual or prioritize digitalization transformation to increase productivity, improve efficiency and less workers? Malaysia SMEs perform poorly in digitalization adoption, only the established enterprises have deployed digitalization to achieve efficiency, competitiveness and growth. SMEs perceive digitalization as complex technologies, costly, high skillset amidst unbroken legacy system, low labour cost and no idea how to initiate. But, combined prowess of IR4.0, 5G and RCEP are market's disruptive game changers, bringing downside or upside, competition or expansion. Overcoming these critical challenges, AIRI GLOBAL's 100% owned-developed IR4.0 innovations aim to play key contribution role in the local perspective, differentiated and affordable solutions to even SMEs.

Ts. R. Karnanethe

Paper 4:
Aviation and Technology

Venue: The Compass Room, Level 2 **Time:** 12:30pm – 12:50pm

- Freelance Specialist / Consultant 21years (Cinematographer / Underwater / Aerial / Land).
- Malaysian Institute of Aviation Technology (MIAT) [2003]
- University Kuala Lumpur- Malaysian Institute of Aviation Technology (Current 19+ Years) Designation: Technical officer.
- B737-400, B747-400 General Familiarization course (MAS Engineering Training Department).
- Industrial Safety Awareness General course (MAS Engineering Training Department).
- MAS company Procedures [MAS Engineering Training Department].
- ETOPS Awareness [MAS Engineering Training Department].
- Aero-Bildungs Gmbh, Part 147 Cat B2 Avionic training
- Avionics, Airframe, and Engine technician.
- Training aids and simulators technical maintenance specialist and designer.
- Design organization approval DCA AN96.
- Hangar Production line work (B747-300/400, B737-200/300, B777, A320, PIPER, CESSNA, PILATUS, HELICOPTER AS355N EUROCOPTER (MAS, AIR ASIA, MFA, POLIS AIRWING AND MHS)
- Trainer for Aviation Technician Course Avionics and Aeromech Hangar Simulation. (UNIL-MIAT)
- Advanced Scuba Diver (NAUI)

Abstract:

Technology sector is fast moving forward then other industries. Though we may take technology for granted, we need to remember that what we have today is the culmination of hundreds of years of scientific progress and breakthrough. Inventions such as internet and mobile phone have changed the world forever. It makes us wonder which technologies will affect the aviation industry most!

Ts. Louis Tay Chee Siong

Paper 5:
Temporary Works and Construction Method Engineering

Venue: The Compass Room, Level 2 **Time:** 3:00pm – 3:20pm

Louis Tay is a Civil Engineer with more than 25 years of experience that encompasses all phases of design and construction process for corporate, institutional, and governmental clients. He graduated from the Department of Civil Engineering, University of Manitoba, Canada in 1996; and began his career with Jehantech group of companies where he served for 16 years (Yr.1996-2011) under the leadership and guidance his mentor, Dr. Tay Choon Jin (CEng MICE, FIEM), the Managing Director.

Abstract:

This paper presents an overview of the latest Malaysian regulatory enhancement and technological trend in the implementation of temporary works in construction with specific focuses in the scaffold access and falsework. Procedural control on the implementation of temporary works has been acknowledged as the crucial essential for the purpose of achieving safety and engineering excellence. Both DOSH and CIDB have been unrelentingly regulating best procedures and standards as code of practice to help harmonize safety, productivity and technology. TAM has been involved in various national technical committees on this subject matter and helps put together the approved code of practices as construction industry standards. The paper further holistically reviews at the ecosystem perspective of current ACPs and regulations for better understanding and raising industry expectations towards compliance for safe use of scaffold and falsework in the construction.

Mr. Mehmood Zeb

Paper 6:

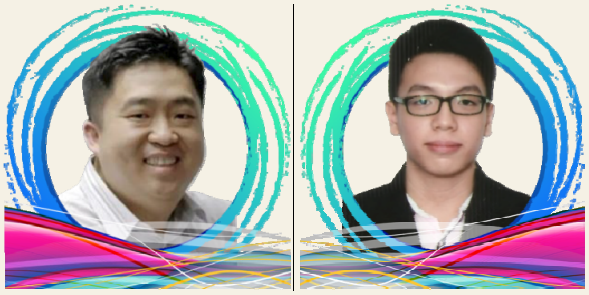
BIM based Digital Twin – Beyond Design & Construction Meeting ESG Standards and FM

Venue: The Compass Room, Level 2 **Time:** 3:20pm – 3:40pm

Zeb has been the technical consultant to various government statutory boards in Singapore to review their BIM implementation requirements, as well as fine-tune their processes and frameworks. He is actively involved in advising and creating BIM Roadmaps and BIM Standards for company-wide and project-wide usage. Besides BIM consultancy, Zeb has a great amount of experience directly involved in numerous building and infrastructure projects, implementing the use of BIM in projects for 3D, 4D, 5D and 6D. Zeb is the Senior Project Coordinator for the Virtual Singapore Grant provided by National Research Foundation (NRF) to support the Singapore Smart Nation initiatives and is also involved in formulating the Singapore BIM Guide.

Abstract:

A BIM based Digital Twin solution connecting people, processes, and data anytime, anywhere and supports to quantify, optimize and monitor carbon emission throughout the construction lifecycle and helps companies to make more informed decisions, be compliant with the more stringent ESG standards and contribute to achieve the target of carbon net zero in 2050. Digital Twin also integrates various building automation systems such as HVAC, Electrical, Meters, Lifts, Access Control, CCTV etc. & simplify integration of operational and technology silos and enable real-time, data-driven management and optimisation of resources.



Dr. Ang Sau Loong
Mr. Cheah Jun Hong

Paper 7: **Smart Traffic Light**

Venue: The Compass Room, Level 2
Time: 3:40pm – 4:00pm

Dr Ang Sau Loong, PhD in Computational Intelligence, MSc, BSc, is currently the senior lecturer at the Department of Computing, UOW Malaysia, KDU Penang University College. He has more than 10 years of experience in teaching and learning. He received his BSc and MSc in Mathematics and PhD in Computational Intelligence from Universiti Sains Malaysia (USM). His technical focuses are artificial neural networks, machine learning and deep learning. His research area covers Multi-layered Perceptron Network (MLP), Radial Basis Function (RBF), K-Means, K-Median, K Nearest Neighbours, Decision Tree, Naïve Bayes (NB), Tree Augmented Network (TAN), General Bayesian Networks (GBN) and Convolutional Neural Networks (CNN). Dr. Ang is a passionate researcher, and has been developing his skills in machine learning and artificial intelligence for 12 years. He is keen on doing research on clustering and classification in multi-dimensional datasets. He has published some articles in journals and conference proceedings which include the World Scientific and Engineering Academy and Society (WSEAS), Journal of Quality Measurement, International Conference on Deep Learning Technologies (ICDLT) and Analysis (JQMA) and Journal of Science and Technology, Pertanika. He is currently involved in internal research grant scheme for the project “Stock Price Prediction using an Improved Deep Learning Model.

Mr. Cheah Jun Hong who received Bachelor of Computer Science major in Artificial Intelligence from UOW Malaysia KDU Penang. He worked on Smart Traffic Light during the Final Year Project which involved in usage of reinforcement learning and deep neural network. He is keen on develop projects or application which are related to artificial intelligence or image processing.

Abstract:

This is an application project which presents an alternative method for traffic light system. This was conducted in order to reduce driver waiting time at the traffic light. The design idea is to develop a vision-based traffic light system which able to change the sequence efficiently. In order to accomplish the paper, CARLA simulator is used to simulate the road environment and several artificial intelligence algorithms such as YOLOv4, Deep SORT and Deep Q Learning have been implemented into the system. Deep Q Learning has been used to control the traffic sequence adaptively. The testing results showed significant improvement in reducing driver waiting time at the traffic light compared with non-efficient traffic sequence. This system can be a potential method to implement it in a real-world scenario based on the testing. The work presented here has profound implications for future studies of the Smart Traffic Light system and may one day help solve the problem of traffic light sequence efficiency.

Dato' Ir. Lim Chow Hock

Paper 8:
Integrated Flood Management - Technological Advances for Malaysia

Venue: The Compass Room, Level 2 **Time:** 4:00pm – 4:20pm

YBhg. Dato' Ir. Lim Chow Hock is currently the Past President of the Institution of Engineers, Malaysia (IEM). He holds a degree in Civil Engineering from the University of Malaya and a postgraduate certificate in Water Resources Engineering from the University of Birmingham. He is a Fellow of the Academy of Sciences Malaysia (ASM) and an Honorary Fellow of the Institution of Engineers Malaysia (IEM). YBhg. Dato' Ir. Lim retired from public service in 2014 after serving for 36 years with the Department of Irrigation and Drainage Malaysia (DID). He has extensive experience in the fields of irrigation, agricultural drainage, flood mitigation, urban stormwater management, dam engineering, river engineering, coastal zone management, hydrology, integrated water resources management, integrated river basin management and coastal reservoir. While in DID, he had served in many capacities such as Senior Engineer for the State of Kedah, Director for the State of Kelantan, Director for the Water Resources and Hydrology Division, and the Director for the River Basin and Coastal Zone Management Division. From 2015–2019, Dato' Ir. Lim served as a Commissioner of SPAN, a national body which regulates the services related to potable water supply and sewerage. He is currently the Chairman of the Malaysia Network for Capacity Development in Sustainable Water Management (MyCDNet) and the Deputy Chairman for the International Coastal Reservoir Research Association (Malaysia Chapter).

Abstract:

The recent December 2021 massive flooding in Selangor and other states in Malaysia should serves as a wake-up call to strategise a more resilient and effective way of managing the flood menace. The time has come for us to reassess our flood mitigation strategies and design criteria. The concept of Integrated Flood Management (IFM) is not new and has much been discussed in Malaysia. However, the full adoption and implementation IFM is far from desire; hence the need to take a serious relook in accelerating this approach as it holds the key to a much more effective way of addressing the flood risks and impacts. Integrated Flood Management is defined as an integrated approach for an effective and efficient flood mitigation management to maximise the efficient use of flood plain and minimise damage to properties and loss of life. The concept of IFM is based on the following principles: managing flood at a river basin level, treating flood water as a resource and part of the water cycle, integrating the management of land and water, adopting a mix of strategies based on risk management approaches, enabling cooperation between different agencies, and ensuring a participatory multi-stakeholders approach.

Ts. Syahrul Fithry bin Senin

Paper A1:
Artificial Intelligence Application In Civil Engineering Construction

Venue: Moscow Room, Level 3 **Time:** 11:30am – 11:50am

Ts. Syahrul Fithry bin Senin has started his career as academician at UiTM Cawangan Pulau Pinang since 2004. A graduate of University Malaya, he started his career by involving in structural and civil engineering consultancy works in the year of 1997. Currently, he is actively involved in using MATLAB and GNU Octave for his numerical methods-related research works and lectures. His focus areas of research are on structural damage/defects recognition and predictions. His knowledge is applied to the Non-Destructive Structural Defect Assessments data from building inspections works by the radar signals from electromagnetic wave sensors such as Ground Penetrating Radar and others related sensors. He is also a Professional Technologist in Building and Construction field and actively involve with Malaysian Board of Technologies.

Abstract:

The structure, pattern, and configuration of construction projects are typically one-of-a-kind designs. Predicting the project safety, cost, progress activities, and activity performance are among of the challengers faced by the construction management. Artificial Intelligence (AI) can help solve this challenge (AI). This presentation will go over the advantages of artificial intelligence and how it may be used in automated building. The future scope of AI in construction operations is reviewed, starting with an introduction to AI and then reviewing AI applications in the construction industry.

Gs. Dr. Tan Mou Leong

Paper A2:
Application of Remote Sensing and GIS for Flood Hazard Mapping

Venue: Moscow Room, Level 3 **Time:** 11:50am – 12:10pm

Dr. Tan Mou Leong completed his Ph.D. from Universiti Teknologi Malaysia and post-doctorate from National University of Singapore. He is currently working as a senior lecturer in Geography at Universiti Sains Malaysia, and is a professional member of Institute of Geospatial and Remote Sensing Malaysia (IGRSM). His main research interest towards the assessment of land use and climate change impact on hydrological extremes in tropical regions using GIS and remote sensing. He involved in various international and national projects for hydro-climatic modelling and extreme events analysis. For instance, he served as PI for two international grants, the NEWTON-NERC and the Kurita Water and Environment Foundation (KWEF) overseas research grant, to research the land use and climate change impacts on water resources in Malaysia. He has published more than 80 research articles in predominantly Q1 and Q2 journals that have been cited over 1400 times based on citation data reported by Scopus. He received the best young lecturer award from school and Sanggar Sanjung award from USM. He also serves as the Vice President of Water Watch Penang, a Malaysian NGO aims to create a water saving society in Malaysia.

Abstract:

More extreme flood events show climate change is undeniable. The Intergovernmental Panel on Climate Change (IPCC) has documented higher frequency and intense floods in the past few decades, threaten the lives, environment, and economy. Therefore, flood hazard mapping is vital to assess the influencing factors to the occurrences of floods. This study aims to develop a GIS-based Multi-criteria Decision-Making (MCDM) model for flood hazard mapping. Twelve parameters, i.e., elevation, surface runoff, rainfall, slope, distance to river, drainage density, soil type, land use, geology, population density, road network and building density, contribute to floods were derived, weighted and ranked from the Analytic Hierarchy Process (AHP). With the advances in satellite technologies, the spatial distribution of extreme rainfall was derived from the Integrated Multi-satellite Retrievals for Global Precipitation Mission (GPM) precipitation products. The flood hazard maps are important act as reference to develop better flood management systems.

Ts. Ir. Wong Chee Fui

Paper A3:
Adoption of Building Information Modelling (BIM) for Construction 4.0 Technology in Malaysia

Venue: Moscow Room, Level 3 **Time:** 12:10pm – 12:30pm

Ir. Ts. Wong Chee Fui is a Specialist at Universiti Tunku Abdul Rahman (UTAR). He holds a MSc degree in Highway and Transport Engineering and a B.Eng. Degree in Civil Engineering, both from Universiti Putra Malaysia. Ir. Ts. Wong is a Professional Engineer with Practicing Certificate (P.Eng),Professional Technologist (P.Tech); Fellow of the Institution of Engineers, Malaysia (FIEM), Fellow of Technological Association Malaysia (FTAM), Associate Fellow of ASEAN Academy of Engineering and Technology (AFAAET), and Member of Malaysian Institute of Management (MMIM). He is currently the Vice Chairman of TAM Selangor Branch and the Council Member of IEM (2021-2024) and was formerly the Executive Director of IEM from 2014-2017. Internationally Ir. Ts. Wong is registered as International Professional Engineer (IntPE) , APEC Engineer; ASEAN Engineer and ASEAN Chartered Professional Engineer (ACPE). Ir. Ts. Wong has been involved in the design, project management and implementation of major construction projects both internationally and locally in which he has gained extensive exposure in the construction sector. His experiences include highway infrastructure design, water supply management, water resources and dam constructions, sewerages, landfills and waste management.

Abstract:

Building Information Modelling (BIM) is an emerging technology in the construction industry where BIM digital platform integrate the construction information data throughout the whole project life-cycle to increase the efficiency, improve the productivity as well as enhancing the collaboration among the project stakeholders. Malaysia government has realised the importance of BIM as an emerging technology to transform the construction in Malaysia toward a sustainable construction. The presentation discusses the policy of BIM adoption and implementation Malaysia, where BIM has been classified as one of the twelve main technologies in Malaysia CIDB “Construction 4.0 Strategic Plan 2021-2025”. The construction sector is also included as one of the six supporting sectors in Malaysia “National Fourth Industrial Revolution (4IR) Policy” in 2021.The presentation will explain the concept and development of BIM; the benefits of BIM implementation in Malaysia as well as the current initiatives to promote the adoption and implementation of BIM in Malaysia.

Gs. Dr. Mohd Amirul bin Mahamud

Paper A4:
GIS-Based Multi-Criteria Evaluation for Potential Inland Aquaculture Site Selection in the George Town Conurbation, Malaysia

Venue: Moscow Room, Level 3 **Time:** 12:30pm – 12:50pm

Gs. Dr. Mohd Amirul bin Mahamud is a senior lecturer at the Geography Section School of Humanities, Universiti Sains Malaysia. His research interest is mainly in Geographic Information System (GIS), Remote Sensing (RS), Urban Modelling, and Land Use Change. He has also worked with academicians and researchers in multi-disciplinary such as Engineering, Social Studies and Islamic Studies.

Abstract:

Although the aquaculture industry contributes less than 0.2% to the Gross Domestic Product (GDP) of Malaysia, it has slowly become an important economic activity due to the high-value species productions for domestic and international markets. In addition, aquaculture can potentially be used as a sustainable solution for food security in the future. At present, the selection of aquaculture sites has not received much attention. Thus, this study aims to integrate a Geographic Information System and multi-criteria evaluation approach in identifying the potential sites for brackish aquaculture in the George Town Conurbation, Malaysia. ArcGIS 10.4 was used to perform site selection analysis together with the essential spatial data such as current land use, environmentally sensitive data, and soil quality that influence suitable sites selection for aquaculture. The selection was undertaken in ad hoc manners based on available land identified by aquaculture operators. The results indicated that the George Town Conurbation has a minimal potential site (0.37%) for aquaculture sites. This minimal number results from the expansion of built-up areas towards urban fringe areas; hence less land becomes available for aquaculture. A reasonable buffer zone should be designated as a boundary between urban development and aquaculture to avoid land-use conflict between these two activities.

Dr. Goh Hui Weng

Paper A5:
Innovations in Constructed Wetland System Design and Applications

Venue: Moscow Room, Level 3 **Time:** 3:00pm – 3:20pm

Dr. Goh Hui Weng is currently a Senior Lecturer in River Engineering and Urban Drainage Research Centre (REDAC) in USM Engineering Campus and registered Charted Engineer. She involved in various research and consultancy projects for Nature-Based Solutions (NBS), such as constructed wetland systems (CWS) and bioretention systems. She is also an appointed facilitator to conduct international trainings and workshops for USains Holding.

Abstract:

Wetlands are often considered as nature-based solutions that can bring numerous benefits to the social, economic and environmental value. The main idea of constructed wetlands is to reproduce a natural wetland ecosystem with the expectation that the contaminated water will be treated as it passes through the system. Other than as flood buffers, constructed wetlands are proven to improve water quality through main mechanisms of physical, biological and chemical processes, such as removal of suspended solids, organic matter, nitrogen, phosphorus, pathogens, and metals. This presentation aims to share the advances in design and application of wetlands, which will cover the introduction and types of wetlands, followed by the lessons learnt through the latest worldwide case studies for wetland applications, filter media and plant selection for various wetland designs, as well as local adaptation and modelling software used for wetland design and applications.

Assoc. Prof. Ir. Ts. Dr. Leong Lee Vien

Paper A6:

Determining The Effects of Risky Riding Behavior on Gap Acceptance of Right-Turning Motorcyclists from Minor Roads at T-Junctions

Venue: Moscow Room, Level 3 **Time:** 3:20pm – 3:40pm

Assoc. Prof. Ir. Ts. Dr. Leong Lee Vien graduated with a Bachelor of Engineering with Honours (Civil Engineering) in 1999, M.Sc. in Highway and Transportation Engineering in 2000, and Ph.D. in Traffic and Transportation Engineering in 2004 from Universiti Sains Malaysia. Currently, she is an Associate Professor at the School of Civil Engineering, Universiti Sains Malaysia. She has extensive experience in conducting traffic studies, traffic impact assessments and transport masterplan studies and is actively involved in conducting research related to transport and traffic engineering. Her main research interests are junctions and highway capacity studies, travel behavior studies, transport demand modeling, microsimulation, and motorcyclist risky riding behavior.

Abstract:

Right turning from minor are the most critical movement at T-junction. However, the risk of right-turning motorcyclist involved in an accident is extreme high because of their riding behaviour. The site study was carried out at three T-junction types which are type A (conventional T-junction), type B (unconventional T-junction with short exit lane for right-turning minor road vehicles) and type C (unconventional T-junction with short exit lane for through major road vehicles). The frequency distribution of five risky riding behaviours of right-turning motorcyclists such as not following the concept of First-In-First-Out (FIFO) (R1), turning without fully stopping (R2), not following the conventional right-turning path (R3), not following priority rules (R4) and forceful turning into major road (R5) was determined and the number of risky riding behaviour performed by each motorcyclist was then analysed. Type-A T-junction is the safest as it has a lower percentage of risky riding behaviour but motorcyclists at type-B T-junction are more behaved as most of them only performed one risky behaviour (56%) or none (34%).

Ts. Tah Ai Sher

Paper A7:
SCADA

Venue: Moscow Room, Level 3 **Time:** 3:40pm – 4:00pm

Ts. Tah Ai Sher, currently Chief Technology Officer of TCK e-SOLUTIONS SDN BHD. She worked at TCK since 2002. Her experience involved various water related projects across governmental field and commercial sector. She is a member of ACS (Australia Computer Society) and affiliate member of Institute of Engineer Malaysia (IEM).

She is specialized in designing Decision Management Support System incorporated with Supervision Control (SCADA) system. Her experience involved in planning, designing, management and deliver of projects range from municipal system, water distribution system, reservoir and water storage system, hydro meteorological system as well as flood mitigation system.

Abstract:

TCK is one of the local pioneers in SCADA and Telemetry in Malaysia. TCK have the competitive advantage of being a local company with a thorough understanding of the geographical and local requirements in Malaysia. With the constant changes to the climate and environment in Malaysia, TCK's Telemetry and SCADA solutions allows users to monitor, access and analyse real time data, evaluate ongoing situations, make informed decisions, and respond with appropriate action. TCK is committed and strive to provide excellent consultation, product and services. TCK is a proud local company where local R&D, manufacturing and solutions meets with current environment, technology, and creativity.

Dr. Puay How Tion

Paper A8:
Application of Computational Fluid Dynamics in Free Surface Flow Problem

Venue: Moscow Room, Level 3 **Time:** 4:00pm – 4:20pm

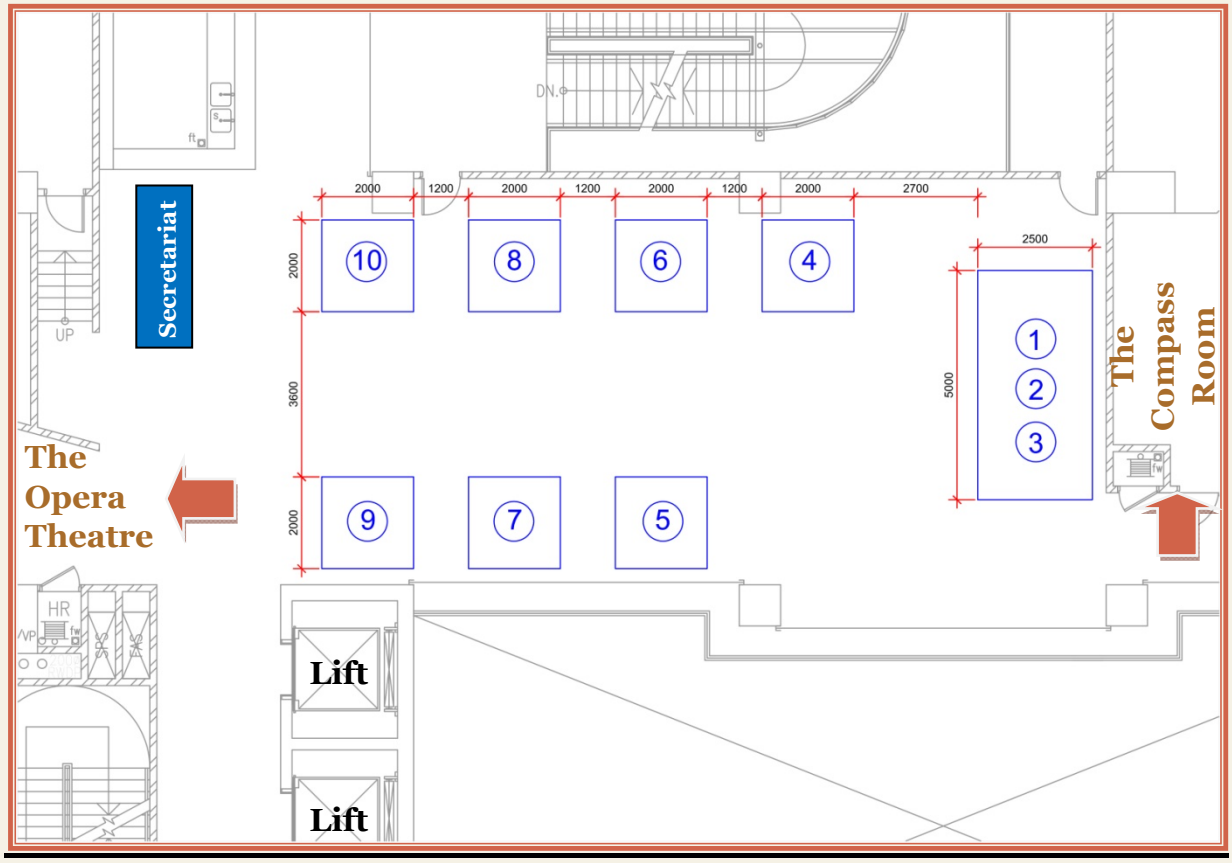
Dr. Puay How Tion is currently a Senior Lecturer in River Engineering and Urban Drainage Research Centre (REDAC), University Sains Malaysia (USM). He was awarded his Ph.D. from Kyoto University for his analytical and numerical work in open channel flow. He is actively developing and improving models for tsunami wave interaction with coastal structures, mudflow phenomena, and sustainable drainage system. He is a member of Japanese Society of Civil Engineer (JSCE) and The Institution of Engineers Malaysia (IEM).

Abstract:

Computational Fluid Dynamics (CFD) has increasingly become an indispensable tool in engineering design and planning due to the rapid increase of computational power and affordability of desktop computer. However, the reliability of CFD's result is highly dependent on model parameter, data quality. In addition, selection of a CFD model depends on the characteristic of the problem, purpose of simulation and the level of accuracy required by the engineer or planner. In this presentation, a general introduction will be given on the application of CFD model for the simulation of flow with free surface. Such model is widely used for flood simulation, coastal wave simulation and open-channel flow simulation. The talk will cover the fundamental concept and characteristics of the model.

EXHIBITORS

Level 2, The Ship Campus



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