



# ASEAN AUSTRALIAN ENGINEERING CONGRESS

## Engineering Solutions in the Age of Digital Disruption

# 12<sup>th</sup> - 14<sup>th</sup> JULY 2022 HYBRID CONGRESS

AAEC2022 Newsletter Vol. 10

## AAEC2022 NEWSLETTER

### BACKGROUND

The ASEAN Australian Engineering Congress 2022 (AAEC2022) aims to foster excellence in the practice of "Engineering Solutions in the Age of Digital Disruption". The Congress presents an opportunity for consulting engineers, researchers, designers, contractors, local councils, implementing government agencies and suppliers to discuss engineering research and solutions for achieving Industry 4.0 and digital transformation while maximizing process efficiencies in the industry for optimizing safety and sustainability.

The Congress also provides a forum to review knowledge, disseminate information, promote awareness, facilitate collaboration, and make recommendations. Innovative engineering projects and potential solutions will be presented in the form of technical presentations to encourage constructive discussions and to also provide a networking opportunity amongst university lecturers, students, staff of government implementing agencies and practicing consulting engineers.

**THEME:**  
Engineering Solutions in the Age of Digital Disruption

### THE ORGANISERS

	
<b>Co-Organiser:</b>	<b>Event Partner:</b>
	

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#### I. Engineering Computing

- Big Data
- Data Analytics
- Internet of Things
- Cloud Computing
- Mobile Computing
- High-Performance Computing

#### II. Network, Communication and Cyber security

- Network of Machines, Products, and Systems
- Mobile Technologies and Platforms (3G/4G/5G)
- Wireless/Real-Time Communications
- Communication Protocols
- Open Spectrum Solutions
- Data Security and Privacy

#### III. Artificial Intelligence and Machine Learning

- Neural Network
- Fuzzy Logic
- Deep Learning
- Augmented and Virtual Reality
- Image Processing
- Video Analysis

#### IV. Automation and Sensors

- Advanced Robotics and Automation
- Autonomous Robots
- Factory Automation
- Design Automation
- Sensor Technology
- Sensing Network

#### V. Materials Science and Manufacturing

- Smart and Advanced Materials
- Additive Manufacturing
- 3D Printing Technology

- Advanced Manufacturing Process
- Integration of Sensors
- Mechanical Systems

#### VI. Smart Energy and Cities

- Renewable Energy
- Smart Energy Consumption
- Engineering and Construction
- Transportation
- Smart Factory

#### VII. Simulation and Optimization

- Building Information Modelling
- Process Planning Simulation
- Simulation of Networks
- Real-Time Data Optimization
- Engineering Simulations

#### VIII. Education 4.0

- Authentic Learning Experiences
- Digital Literacy, Connectivity and Equity
- Teaching Transformed
- Gamification and Assessments Re-imagined
- Teaching with AR, MR and XR

**AAEC2022 conference proceedings will be Scopus-indexed under Springer's Lecture Notes series**

#### **ORGANIZING COMMITTEE**

Chairman: Ir. Dennis Ong (Engineers Australia)  
 Deputy Chairman: Prof. Su Hieng Tiong (Swinburne)  
 Secretary: Dr. Choo Chung Siung (Swinburne)  
 Treasurer: Dr. Daniel Kong (Monash University)  
 Assistant Treasurer: Dr. Elammaran Jayamani (Swinburne)

#### Committee Members:

- Prof. Wallace Wong (Swinburne)
- Assoc. Prof. Basil Wong Tung Liong (Swinburne)
- Mr. Astley Pung (Engineers Australia)
- Dr. Khairul Hafiz Bin Sharkawi (SDEC)
- Mr. Hazwan Bin Razak (SDEC)
- Ms. Nur Hartini Mardan (SDEC)
- Ms. Lelia Sim (SDI)
- Ms. Rosalind Wong (SDI)

## SPEAKERS

KEYNOTE SPEAKERS			Thought Leadership Forum on IR4.0 and 5G in Malaysia
 <p>Mr. Paul Sanda Minister-Counsellor (Commercial) and, Senior Trade &amp; Investment Commissioner, Malaysia &amp; Brunei, Australian Trade &amp; Investment Commission (Austrade)</p>	 <p>Dr. Nick Fleming National President and Chair of Board Engineers Australia</p>	 <p>Prof. Tan Sri Dato' Ir. Dr. Chuah Hean Teik President, ASEAN Academy of Engineering and Technology</p>	 <p>Mr. Mohd Ridzuan Mohd Nor Head, Digital Operations &amp; Service Management, Digital Nasional Berhad (DNB)</p>
Thought Leadership Forum on IR4.0 and 5G in Malaysia		Plenary 1: Industry 4.0 And Future Technologies	
 <p>Mr. Nee Ngie Sing Head of Network Engineering and Operation, Sarawak Digital Economy Corporation (SDEC)</p>	 <p>Ts. Amir Irsyad Bin Mohamed Samsudin Deputy Director, 5G Delivery Office, Malaysian Communications &amp; Multimedia Commission (MCMC)</p>	 <p>YBhg. Dato' Ir. (Dr.) Lee Yee Cheong AAEC 2022 Congress Advisor</p>	 <p>Mr. Vincent Wu Senior Manager, Partnership &amp; Ecosystem Development, Digital Nasional Berhad (DNB)</p>
Plenary 1: Industry 4.0 And Future Technologies	Plenary 2: The Internet of Things, Network Communication and Cybersecurity		
 <p>Mr. Idjarmizuan bin Ibrahim (Adam) (Virtual) Senior Vice President, Technology Development Division, Malaysian Technology Development Corporation (MTDC)</p>	 <p>Prof. Ir. Ts. Dr. Al-Khalid Bin Haji Othman Deputy Chief Scientist &amp; Deputy Chief Advisor Sarawak Multimedia Authority (SMA)</p>	 <p>Dr. Ali R. Ebadi Advisor to Board of Directors, MEASAT Satellite Systems Sdn. Bhd.</p>	 <p>Mr. Lavindar Singh Jay Solution Architect, Xperanti IoT Sdn. Bhd.</p>

**Plenary 3: Artificial Intelligence & Automation in IR4.0**



Professor Dr. Narayanan  
A/L N. Kulathu Ramaiyer  
Director, Institute of Social  
Informatics & Technological  
Innovations, UNIMAS



Dr. Ishkandar Bin Baharin  
President, Malaysia  
Robotics and Automation  
Society (MyRAS)



Mr. Yogesh Agarwal  
Director, Solution  
Architecture, GE Digital



Mdm. Sim Ko Sin  
Senior Vice President, Sarawak  
Energy Berhad (SEB)

**Plenary 4: Smart Energy, Cities, and Factories**



Ts. Mazli Bin Mustaffa  
Chief Executive Officer,  
Sarawak Metro



Mr. Mandeshpal Singh  
Head of Product  
(Enterprise), Digital  
Nasional Berhad (DNB)



Mr. Philip Chan Kok Leong  
Director, Ting Heng Energy  
Consultancy Pte. Ltd.



Prof. Cheryl Desha  
Industry Engagement Director,  
School of Engineering and Built  
Environment Griffith University

**Plenary 5: Digital Construction for IR4.0**



Mr. Andy Tiong Meng Jun  
Project Planning  
Management Consultant,  
PCSS Consultancy Sdn. Bhd.



Mr. Ken Lee  
Director, Aurecon Group  
Pty. Ltd.



Ts. John Lim Ji Xiong  
Executive Director – Digital  
& Innovation, Gamuda  
Berhad



Mr. Kuthur Sriram  
Global Manager – Education  
Program,  
Bentley Education – Bentley  
Systems



## Plenary 6: Education 4.0



Professor Dr. ML Dennis  
Wong  
Deputy Provost, Heriot-  
Watt University Malaysia



Professor Dr. Nor Aziah  
Alias  
Professor of Teaching and  
Learning  
Universiti Teknologi MARA  
(UiTM)



Mr. Jamiran Bin Salam  
Special Administrative  
Officer  
Ministry of Education,  
Innovation and Talent  
Development Sarawak

### **TECHNICAL SPEAKERS**

#### **Track: Artificial Intelligence and Machine Learning**

- Dr. Ling Chen Hoe (Engineers Australia, Australia)
- Mr. Ang Yik Kang (Monash University Malaysia, Malaysia)
- Dr. Choo Chung Siung (Swinburne University of Technology Sarawak Campus, Malaysia)
- Lavindar Singh Jay (Satok Bridge Area Consulting Engineers Sdn. Bhd., Malaysia)
- Mr. Abdullah (Donanim Haber, Turkey)
- Mr. Khaled Yahya Mohamed Mahmoud ELKarazle (Swinburne University of Technology Sarawak Campus, Malaysia)
- Dr. Yanuar Zuldiansyah Arief (Universiti Malaysia Sarawak, Malaysia)
- Dr. T. Ramraj (Coimbatore Institute of Technology, India)
- Dr. Idawati Ismail (Universiti Malaysia Sarawak, Malaysia)
- Mr. Clement Ting Pek Wen (Swinburne University of Technology Sarawak Campus, Malaysia)
- Ms. Sarah Jane Kho (Swinburne University of Technology Sarawak Campus, Malaysia)

#### **Track: Materials Science and Manufacturing**

- Lee Yu Wee (Universiti Malaysia Sarawak, Malaysia)
- Dr. Khairul Anwar Mohamad Said (Universiti Malaysia Sarawak, Malaysia)
- Mr. Mohamed Afizal Bin Mohamed Amin (Universiti Malaysia Sarawak, Malaysia)
- Ms. Sharon Gooi Ai Ping (Monash University Malaysia, Malaysia)
- Felicia Terry anak Lo (Universiti Malaysia Sarawak, Malaysia)

#### **Track: Engineering Computing**

- Ir. Dr. Low Hin Foo (OSD Alliance @ OSD Consultants (M) Sdn. Bhd., Malaysia)
- Mr. Harunal Rejan Ramji (Universiti Malaysia Sarawak, Malaysia)
- Mr. Low Lip Shen (Swinburne University of Technology Sarawak Campus, Malaysia)
- Dr. Brian Loh Chung Shiong (Swinburne University of Technology Sarawak Campus, Malaysia)

#### **Track: Simulation and Optimization**

- Dr. Evon Lim Wan Ting (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Christiaan Pietropoli (RMIT University Melbourne, Australia)
- Mr. Asrani Lit (Universiti Malaysia Sarawak, Malaysia)

### **Track: Smart Energy and Cities**

- Ir. Kesavan Jaganathan (Director - Freelance Consultant, Malaysia)
- Mr. Kenny Ley Enteleng (Sarawak Metro Sdn. Bhd., Malaysia)
- Dr. Victor Bong Nee Shin (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Phil Chan Siew Thong (Swinburne University of Technology Sarawak Campus, Malaysia)
- Dr. Yonis M Buswig (Universiti Malaysia Sarawak, Malaysia)
- Mr. John Sackey (University of Mines and Technology, Ghana)
- Dr. Elizabeth Chong Eu Mee (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Samwel Abuchi Mrema (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Tan Hee Wee (HWT Engineering and Construction Consulting, Malaysia)
- Dr. Alan ling Sieng Yew (Universiti Malaysia Sarawak, Malaysia)
- Assoc. Prof. Ir. Dr. Yun Li Go (Heriot-Watt University Malaysia Campus, Malaysia)
- Assoc. Prof. Dr. Basil T. Wong (Swinburne University of Technology Sarawak Campus, Malaysia)
- Ms. Bong Jit Boon (Swinburne University of Technology Sarawak Campus, Malaysia)
- Ms. Siti Nur Hanisah Binti Zuhari (Universiti Malaysia Sarawak, Malaysia)

### **Track: Automation and Sensors**

- Assoc. Prof. Hong Siang Chua (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Anderson Kho Ngap Chai (Swinburne University of Technology Sarawak Campus, Malaysia)
- Mr. Liam Bekir (RMIT University Melbourne, Australia)
- Mr. Alfred Jia Yee Tan (Swinburne University of Technology Sarawak Campus, Malaysia)

### **Track: Education 4.0**

- Dr. Nor Azalina Rosli (Universiti Malaysia Sarawak, Malaysia)
- Dr. Choo Chung Siung (Swinburne University of Technology Sarawak Campus, Malaysia)
- Dr. Koh Yit Yan (Newcastle University Institute of Higher Education Pte. Ltd., Singapore)

### **TABLE TOP DISPLAYS (EXHIBITION)**

- Digital Nasional Berhad (DNB)
- Sarawak Metro Sdn. Bhd.
- Ministry of Education, Innovation and Talent Development Sarawak (MEITD)
- Gamuda Berhad
- Sarawak Energy Berhad (SEB)
- SAINS Sdn. Bhd.
- Swinburne Innovation Malaysia Sdn. Bhd. (SWIM)
- Sarawak Digital Economy Corporation Berhad (SDEC)
- Tabung Ekonomi Gagasan Anak Sarawak (TEGAS)
- Malaysia Digital Economy Corporation (MDEC)

### **TENTATIVE PROGRAMME**

## Day 1 - 12 July 2022 (Tuesday)

8:30am	Registration/Arrival of Participants & Speakers
9:00am	Welcome Address by Ir. Dennis Ong, Organising Chairman of AAEC2022
<b>Thought Leadership Forum on IR4.0 and 5G in Malaysia</b>	
9:05am	<p><b>Chair: Ir. Prof. Lau Hieng Ho, Pro Vice-Chancellor and Chief Executive of Swinburne University of Technology Sarawak Campus</b></p> <p>Under this forum, the industry leaders will delve into the key prospects of 5G, challenges and issues and how 5G is made possible in Malaysia and Sarawak.</p>
9:10am	Mr. Mohd Ridzuan Mohd Nor Head, Digital Operations & Service Management, Digital Nasional Berhad (DNB), Malaysia
9:40am	Mr. Nee Ngie Sing Head of Network Engineering and Operation, Sarawak Digital Economy Corporation (SDEC), Malaysia
9:50am	<p><b>Implementation of 5G In Malaysia</b></p> <p>Ts. Amir Irsyad Bin Mohamed Samsudin (Virtual) Deputy Director, 5G Delivery Office, Malaysian Communications &amp; Multimedia Commission (MCMC), Malaysia</p>
10:00am	Questions and Answers session (15 mins)
10:15am	Refreshments (15 mins)   Venue: Maker's Lab SDEC Corporate Video Showcase
<b>Plenary 1: Industry 4.0 and Future Technologies</b>	
10:30am	<p><b>Chair: Ir. Dennis Ong, Organizing Chairman, AAEC2022</b></p> <p>In this plenary, the current state of Industry 4.0 (IR4.0) implementation and its associated benefits and advantages in various industry sectors will be the main discussion. Stories of successful implementations of IR4.0 and how they have shaped the world in terms of creating smart future will be shared by the invited plenary speakers. In addition, the future of IR4.0 and how it is affecting the world in leading to future cut-edge technologies will also be in the discussions.</p>

10:35am	<b>Employment Opportunities of University Graduates in the Digital Age</b> Dato' Ir. Dr. Lee Yee Cheong (Virtual) AAEC2022 Congress Advisor, Malaysia
11:00am	Mr. Vincent Wu Senior Manager, Partnership & Ecosystem Development, Digital Nasional Berhad (DNB), Malaysia
11:25am	Mr. Idjarmizuan bin Ibrahim (Adam) (Virtual) Senior Vice President, Technology Development Division, Malaysian Technology Development Corporation (MTDC), Malaysia
11:50am	Questions and Answers session (15 mins)
12:05pm- 1:05pm	Lunch   Venue: Pantry Area, Level 1 Livestream by SDEC (12:45pm – 1:00pm)
<b>Plenary 2: The Internet of Things, Network Communication, and Cybersecurity</b>	
1:05pm	<b>Chair: Mr. Hazwan Razak, Head of Innovation and Entrepreneurship, Sarawak Digital Economy Corporation</b>  The internet of things (IoT) has been around for decades. What is the critical role that is played by the IoT in the IR4.0? How can it further enhance IR4.0? One of the major concerns with the IoT is cybersecurity. In general, industries are concerned with how these data are being stored securely and handled over the computing clouds. These questions will be the main focus in this plenary session.
1:10pm	<b>Sarawak Digital Community Centre (DCC): Design &amp; Development of Holistic and Inclusive Framework</b> Professor Ir. Ts. Dr. Al-Khalid Bin Othman (Virtual) Deputy Chief Scientist and Deputy Chief Advisor for Sarawak Digital Economy, Sarawak Multimedia Authority (SMA), Malaysia
1:35pm	<b>5G Spectrum Allocation Worldwide: Licensed and Unlicensed Frequency Bands</b> Dr. Ali R. Ebadi Advisor to Board of Directors of MEASAT, Malaysia
1:55pm	<b>IoT – Why We Need to Embrace It</b> Mr. Lavindar Singh Jay Solution Architect, Xperanti IoT Sdn Bhd, Malaysia



2:20pm	Questions and Answers session (15 mins)
2:35pm	Coffee Break   Venue: Maker's Lab
<b>Opening Ceremony</b>	
3:00 pm	Arrival of Guests and Media
3:30pm	Arrival of <b>YAB Datuk Patinggi Tan Sri (Dr) Abang Haji Abdul Rahman Zohari Bin Tun Datuk Abang Haji Openg, Premier of Sarawak</b>
	Negaraku & Ibu Pertiwiku
	Opening <i>Doa</i> by Ustaz Haji Mohammad Ihsan bin Haji Haidzir
	Welcome Speech by <b>Ir. Dennis Ong, Organising Chairman AAEC2022</b>
	Welcome Speech by <b>Prof. Lau Hieng Ho, Pro Vice-Chancellor and Chief Executive of Swinburne University of Technology Sarawak Campus</b>
4:00pm	Opening Remarks by <b>YAB Datuk Patinggi Tan Sri (Dr) Abang Haji Abdul Rahman Zohari Bin Tun Datuk Abang Haji Openg, Premier of Sarawak</b>
	Presentation of Certificates of Appreciation to Partners of AAEC2022
	Souvenir Presentation to <b>YAB Datuk Patinggi Tan Sri (Dr) Abang Haji Abdul Rahman Zohari Bin Tun Datuk Abang Haji Openg, Premier of Sarawak</b>
<b>Keynote Presentations</b>	
4:30pm	<b>Growing the 'Digital Economy' Agenda in Australia and ASEAN</b> Mr. Paul Sanda, Minister-Counsellor (Commercial) and, Senior Trade & Investment Commissioner, Malaysia & Brunei, Australian Trade & Investment Commission (Austrade), Malaysia (Virtual)
4:50pm	<b>Engineering Future-fit Solutions: Digital and Beyond</b> Dr. Nick Fleming, National President and Chair of Board Engineers Australia, Australia (Virtual)
5:10pm	<b>Educating Future Engineers in the Age of Digital Disruption</b> Professor Tan Sri Dato' Ir. Dr. Chuah Hean Teik, President, ASEAN Academy of Engineering and Technology, Malaysia (Virtual)
5:30pm	Official Exhibition Tour (Makers' Lab)
	Refreshments (VIPs Lounge)

## Day 2 – 13 July 2022 (Wednesday)

8:30am	Arrival of Participants & Speakers		
<b>Plenary 3: Artificial Intelligence &amp; Automation in IR4.0</b>			
9:00am	<p><b>Chair: Professor Dr. Patrick Then Hang Hui, Director, Centre for Digital Futures, Head School of Information and Communication Technologies, Faculty of Engineering, Computer &amp; Science, Swinburne University of Technology Sarawak</b></p> <p>What are the current benefits and obstacles in adopting artificial intelligence (AI) for IR4.0? How does AI assist in realizing the full potential of IR4.0? How can it be coupled with automation processes in the industry in the realm of IR4.0? These will be among the questions to be addressed by the invited speakers in the plenary session.</p>		
9:05am	<p><b>Towards Humanised AI Technologies</b>            Professor Dr. Narayanan A/L N. Kulathu Ramaiyer            Director, Institute of Social Informatics &amp; Technological Innovations, Universiti Malaysia Sarawak (UNIMAS), Malaysia</p>		
9:30am	<p><b>Standardization and Global Robotics Exchange Framework for IR4.0</b>            Dr. Ishkandar Bin Baharin            President, Malaysia Robotics and Automation Society (MyRAS), Malaysia</p>		
9:55am	<p><b>Role of AI / ML / Digital Twins in Digital Transformation and Energy Transition</b>            Mr. Yogesh Agarwal (Virtual)            Director, Solution Architecture, GE Digital, Malaysia</p>		
10:20am	Questions and Answers session (15 mins)		
10:35am	<p><b>MDEC Digital Jobs Salary Incentive (MYWiT)</b>            Mr. Nicholas Tan            Manager, MYWiT, Ecosystem Development Division, Malaysia Digital Economy Corporation (MDEC)</p>		
10:40am	Break (20 mins)   Venue: Maker's Lab		
<b>Technical Session 1</b>			
	<p><b>Track: Artificial Intelligence and Machine Learning</b></p> <p><i>Session Chair: Assoc. Prof. Ir. Dr. Basil T. Wong</i></p> <p><i>Venue: Training Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>	<p><b>Track: Smart Energy and Cities</b></p> <p><i>Session Chair: Ir. Dr. Choo Chung Siung</i></p> <p><i>Venue: Auditorium, Ground Floor, TEGAS Digital Village</i></p>	<p><b>Track: Materials Science and Manufacturing</b></p> <p><i>Session Chair: Dr. Elammaran Jayamani</i></p> <p><i>Venue: Event Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>

11:00am	<p><b>The Potential Impact of AI and Automation in collaboration with the workforce: The Human Machine Symbiosis (Virtual)</b></p> <p>Dr. Ling Chen Hoe Engineers Australia, Australia</p>	<p><b>Smart &amp; Sustainability City Ecosystem (Virtual)</b></p> <p>Ir. Kesavan Jaganathan Director - Freelance Consultant, Malaysia</p>	<p><b>Quantification Assessment of Kuching Municipal Solid Waste for Potential Energy Recovery (Virtual)</b></p> <p>Lee Yu Wee Universiti Malaysia Sarawak, Malaysia</p>
11:20am	<p><b>Application of Artificial Intelligence Technique and Empirical Formulas for Estimating Evapotranspiration (Virtual)</b></p> <p>Mr. Ang Yik Kang Monash University Malaysia, Malaysia</p>	<p><b>Leveraging BIM for Kuching Urban Transportation System (KUTS) (Virtual)</b></p> <p>Mr. Kenny Ley Enteleng, Sarawak Metro Sdn Bhd, Malaysia</p>	<p><b>Modification of Sulfonated Poly Ether Ether Ketone (SPEEK) Proton Exchange Membrane with Sodium Chloride for Fuel Cell Application (Virtual)</b></p> <p>Mr. Mohamed Afizal Bin Mohamed Amin Universiti Malaysia Sarawak, Malaysia</p>
11:40am	<p><b>Early Warning Exposure (Virtual)</b></p> <p>Mr. Anderson Kho Ngap Chai  Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>A Proposed BIM-Based Construction Project Management Framework Integrated with Scheduling and Cost Estimation (Face-to-Face)</b></p> <p>Dr. Victor Bong Nee Shin Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Fabrication of Sulphonated Poly(ether ketone) (SPEEK) Calcium Oxide (CaO) Multilayer Membrane for Fuel Cell Application (Virtual)</b></p> <p>Dr. Khairul Anwar Mohamad Said Universiti Malaysia Sarawak, Malaysia</p>
12:00pm	<p><b>AgriTech Solutions from SBACE (Face-to-Face)</b></p> <p>Mr. Lavindar Singh Jay Satok Bridge Area Consulting Engineers Sdn Bhd, Malaysia</p>	<p><b>Minimizing Life Cycle Impacts of Construction Waste Through BIM-LCA Integration (Virtual)</b></p> <p>Mr. Samwel Abuchi Mrema Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Performance of Palm Oil Fractions as Rejuvenators in Bitumen (Virtual)</b></p> <p>Ms. Sharon Gooi Ai Ping Monash University Malaysia, Malaysia</p>
12:20pm	Lunch   Venue: Pantry Area, Level 1		

Technical Session 1 (Cont'd)			
	<p><b>Track: Artificial Intelligence and Machine Learning</b></p> <p><i>Session Chair: Assoc. Prof. Ir. Dr. Basil T. Wong</i></p> <p><i>Venue: Training Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>	<p><b>Track: Smart Energy and Cities</b></p> <p><i>Session Chair: Ir. Dr. Choo Chung Siung</i></p> <p><i>Venue: Auditorium, Ground Floor, TEGAS Digital Village</i></p>	<p><b>Track: Materials Science and Manufacturing</b></p> <p><i>Session Chair: Dr. Elammaran Jayamani</i></p> <p><i>Venue: Event Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>
1:20pm	<p><b>Cough Sound Disease Detection with Artificial Intelligence (Face-to-Face)</b></p> <p>Ms. Sarah Jane Kho Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Development of an easily retro-fitted smart adaptive vent for efficient cooling (Face-to-Face)</b></p> <p>Mr. Phil Chan Siew Thong Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Evaluation of Coconut Husk-Based Magnetic Sorbent for Defoaming Application (Virtual)</b></p> <p>Felicia Terry anak Lo Universiti Malaysia Sarawak, Malaysia</p>
1:40pm	<p><b>Feature Reduction of Relational Oil Drilling Data before Propositionalization and Harmonization by Measuring Relational Data Missingness using Ensemble Learning (Face-to-Face)</b></p> <p>Mr. Clement Ting Pek Wen Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Space Vector Pulse Width Modulation (SVPWM) Technique for Harmonic Reduction Three Phase Inverter System (Face-to-Face)</b></p> <p>Dr. Yonis M Buswig Universiti Malaysia Sarawak, Malaysia</p>	<p><b>Track: Engineering Computing</b></p> <p><b>Evaluation of Interfacing Shear Strength of Various Codes vs Experimental Results (Virtual)</b></p> <p>Ir. Dr. Low Hin Foo OSD Alliance @ OSD Consultants (M) Sdn Bhd, Malaysia</p>
2:00pm	<p><b>Intent and Context Understanding for Improvement of Search Engine Results on Social Networks (Virtual)</b></p> <p>Mr. Abdullah Donanim Haber, Turkey</p>	<p><b>Production of Liquid Fuel using Waste Surgical Nose Masks as Raw Material (Virtual)</b></p> <p>Mr. John Sackey University of Mines and Technology, Ghana</p>	<p><b>Track: Engineering Computing</b></p> <p><b>Finite element Analysis of an electrochemical adsorbed monolayers (Virtual)</b></p> <p>Mr. Harunal Rejan Ramji Universiti Malaysia Sarawak, Malaysia</p>
2:20pm	Refreshments   Venue: Maker's Lab		

## Plenary 4: Smart Energy, Cities, and Factories

	<p><b>Chair: Dr. Ng Sing Muk, General Manager, Research and Development Department, Sarawak Energy Berhad, Malaysia</b></p> <p>Through the IR4.0 adoption, smart energy consumption can be implemented in various industry devices and systems. The couplings between cyber-physical systems, automation, and IoT can lead to the birth of smart cities and factories. In this plenary session, strategic moves implemented by local governments in building smart energy usage, cities, and factories in Sarawak or Malaysia will be shared by the invited speakers. Discussions on the current preparation towards the adoption of IR4 locally as well as on how the IR4.0 can benefit both local industries and international partners will be the main focus in the session.</p>
2:40pm	<p>Mdm. Sim Ko Sin Senior Vice President, Sarawak Energy Berhad (SEB), Malaysia</p>
3:05pm	<p><b>Smart Transportation System in Sarawak – The KUTS</b> Ts. Mazli Bin Mustaffa Chief Executive Officer, Sarawak Metro Sdn Bhd, Malaysia</p>
3:30pm	<p>Mr. Mandeshpal Singh Head of Product (Enterprise), Digital Nasional Berhad (DNB), Malaysia</p>
3:55pm	<p><b>Smart Sustainable Solution on Digitalisation for the Optimization of Building Energy Efficiency Performance</b> Mr. Philip Chan Kok Leong Director, Ting Heng Energy Consultancy Pte. Ltd, Singapore</p>
4:20pm	<p><b>Digital Resilience in the Face of Disasters for Disaster Risk Reduction</b> Professor Cheryl Desha (Virtual) Industry Engagement Director, School of Engineering and Built Environment Griffith University, Australia</p>
4:45pm	<p>Questions and Answers session</p>
5:15pm	<p>Conclusion of Day 2</p>



## Day 3 – 14 July 2022 (Thursday)

8:30am	Arrival of Participants & Speakers
<b>Plenary 5: Digital Construction for IR4.0</b>	
	<p><b>Chair: Ts. Dr. Chai Chang Saar, Discipline Leader – Built Environment &amp; Senior Lecturer, Faculty of Engineering, Computing and Science, Swinburne University of Technology Sarawak Campus, Malaysia</b></p> <p>In this plenary session, the discussion focuses on how the implementation of digital technologies has improved the construction processes and revolutionized the industry. Digital technologies such as Building Information Modelling (BIM), 3D printing, augmented and virtual reality (AR &amp; VR), laser scanning, robotics, analytics software, blockchain, digital twins, and internet of things are highly sought after for improving efficiencies or capacities of construction processes. Nevertheless, within the construction industry itself, the transformation effects of using these digital technologies are still not fully understood, especially on connectivity of linking up and synchronizing separate activities in the digitized construction processes. The plenary session also delves into the readiness of digital construction for IR4.0 and how it would impact the industry in ASEAN and Australia.</p>
9:00am	<p><b>Construction In Digital Era</b> Mr. Andy Tiong Meng Chun Professional Services Director, PCSS Consultancy Sdn Bhd, Malaysia</p>
9:25am	<p><b>IR4.0 Engineering the Twins</b> Mr. Ken Lee (Virtual) Director, Aurecon Group Pty. Ltd., Australia</p>
9:50am	<p><b>Digital Innovation within a Traditional Industry</b> Ts. John Lim Ji Xiong Executive Director – Digital &amp; Innovation, Gamuda Berhad, Malaysia</p>
10:15am	<p><b>The Digital Engineering Evolution Has Arrived</b> Mr. Kuthur Sriram Global Manager – Education Program, Bentley Education – Bentley Systems, Australia</p>
10:40am	Questions and Answers session
11:00am	Refreshments   Venue: Maker's Lab

## Technical Session 2

Technical Session 2			
	<p><b>Track: Artificial Intelligence and Machine Learning</b></p> <p><i>Session Chair: Dr. Almon Chai Wei-Yen</i></p> <p><i>Venue: Training Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>	<p><b>Track: Smart Energy and Cities</b></p> <p><i>Session Chair: Dr. Daniel Looi Ting Wee</i></p> <p><i>Venue: Auditorium, Ground Floor, TEGAS Digital Village</i></p>	<p><b>Track: Education 4.0</b></p> <p><i>Session Chair: Dr. Victor Bong Nee Shin</i></p> <p><i>Venue: Event Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i></p>
11:20am	<p><b>Detection of Artificially Generated Facial Images using Ensemble Learning (Face-to-Face)</b></p> <p>Mr. Khaled Yahya Mohamed Mahmoud ELKarazle Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Using Unmanned Aerial Vehicles for Traffic Flow Analysis at Large Multi-Lane Roundabout (Virtual)</b></p> <p>Dr. Elizabeth Chong Eu Mee Swinburne University of Technology Sarawak Campus, Malaysia</p>	<p><b>Online Learning: Students' Barriers and Feedback on the Instructional Delivery Methods (Virtual)</b></p> <p>Dr. Nor Azalina Rosli Universiti Malaysia Sarawak, Malaysia, Malaysia</p>
11:40am	<p><b>Recent progress on artificial intelligence application for COVID-19 monitoring and mitigation system in Indonesia (Virtual)</b></p> <p>Dr. Yanuar Zulardiansyah Arief Universiti Malaysia Sarawak, Malaysia</p>	<p><b>Adoption of modular MEP for the Construction Industry in Singapore (Virtual)</b></p> <p>Mr. Tan Hee Wee HWT Engineering and Construction Consulting, Malaysia</p>	<p><b>Geoeducation 4.0 Augmented reality in the new reality (Face-to-Face)</b></p> <p>Dr. Choo Chung Siung Swinburne University of Technology Sarawak Campus, Malaysia</p>
12:00pm	<p><b>A Systematic Literature Review on Determining the effectiveness of short-term COVID19 prediction models (Virtual)</b></p> <p>Dr. T. Ramraj Coimbatore Institute of Technology, India</p>	<p><b>The influence of weather regimes on Off-grid Peer-to-Peer Energy Trading (Face-to-Face)</b></p> <p>Dr. Alan Ling Sieng Yew Universiti Malaysia Sarawak, Malaysia</p>	<p><b>Rapid Transition from Offline to Online: The Teaching and Learning Experience in Engineering Education (Face-to-Face)</b></p> <p>Dr. Koh Yit Yan Newcastle University Institute of Higher Education Pte. Ltd., Singapore</p>

12:20pm	<b>Data Analysis of Fly Ash Geopolymer Compressive Strength Using Machine Learning Method (Face-to-Face)</b> Dr. Idawati Ismail Universiti Malaysia Sarawak, Malaysia	<b>Investigation of Voltage Profile Variation and Stability of PV-Grid Interconnected System (Virtual)</b> Associate Professor Ir. Dr. Yun li Go Heriot-Watt University Malaysia Campus, Malaysia	<b>Track: Engineering Computing</b> <b>Task-Based Multidimensional Data Visualization Framework for Diabetes Management (Virtual)</b> Mr. Low Lip Shen Swinburne University of Technology Sarawak Campus, Malaysia
12:40pm	<b>The application of deep learning to pipe jacking in highly weathered geology (Face-to-Face)</b> Dr. Choo Chung Siung Swinburne University of Technology Sarawak Campus, Malaysia	<b>Solar Photovoltaic Thermal Profiles Development and Visualization: Experimental, Numerical Analysis and Validation (Virtual)</b> Associate Professor Ir. Dr. Yun li Go Heriot-Watt University Malaysia Campus, Malaysia	<b>Track: Engineering Computing</b> <b>Reverse Drug Discovery Web Portal (RDD) (Virtual)</b> Dr. Brian Loh Chung Shiong Swinburne University of Technology Sarawak Campus, Malaysia
1:00pm	Lunch   Venue: Pantry Area, Level 1		
<b>Technical Session 2 (Cont'd)</b>			
	<b>Track: Automation and Sensors</b> <i>Session Chair: Dr. Almon Chai Wei-Yen</i> <i>Venue: Training Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i>	<b>Track: Smart Energy and Cities</b> <i>Session Chair: Dr. Daniel Looi Ting Wee</i> <i>Venue: Auditorium, Ground Floor, TEGAS Digital Village</i>	<b>Track: Simulation and Optimization</b> <i>Session Chair: Dr. Victor Bong Nee Shin</i> <i>Venue: Event Room, 1<sup>st</sup> Floor, TEGAS Digital Village</i>
2:00pm	<b>An Intelligent Monitoring and Maintenance System for Wind Turbine Foundations (Virtual)</b> Mr. Liam Bekir RMIT University Melbourne, Australia	<b>Development of smart HVAC thermostat with AI using visual detector for energy saving (Face-to-Face)</b> Associate Professor Dr. Basil T. Wong Swinburne University of Technology Sarawak Campus, Malaysia	<b>Simulation on Application of EMG Signals for DC Motor Control (Virtual)</b> Dr. Evon Lim Wan Ting Swinburne University of Technology Sarawak Campus, Malaysia

2:20pm	<b>Temperature Modulation of Metal Oxide Semiconductor Gas Sensors for Black Pepper Geo-tracing (Face-to-Face)</b> Associate Professor Dr. Hong Siang Chua Swinburne University of Technology Sarawak Campus, Malaysia	<b>UAV-based lane-changing reduction using traffic video analyser (Face-to-Face)</b> Ms. Bong Jit Boon Swinburne University of Technology Sarawak Campus, Malaysia	<b>Simulating Sensor Data to Inform Digital Twin of an On-Shore Wind Turbine Foundation (Virtual)</b> Mr. Christiaan Pietropoli RMIT University Melbourne, Australia
2:40pm	<b>Investigation of the Effect of Polyvinyl Acetate Coating on Multiple U-shaped Fibre Optic Sensors in Different Solution Conditions (Virtual)</b> Mr. Alfred Jia Yee Tan Swinburne University of Technology Sarawak Campus, Malaysia	<b>Development of Intelligent Control for Lower Limb (Virtual)</b> Ms. Siti Nur Hanisah binti Zuhari Universiti Malaysia Sarawak, Malaysia	<b>On the Impact of the Radio Hub Placement for 10Å—10 mesh-WiNoC Architecture (Virtual)</b> Mr. Asrani Lit Universiti Malaysia Sarawak, Malaysia
3:00pm	Break   Venue: Maker's Lab		
<b>Plenary 6: Education 4.0</b>			
	<b>Chair: Associate Professor Dr. Ida Fatimawati bt Adi Badiozaman, Executive Dean (Research) - Interim &amp; Associate Professor, Faculty of Business, Design and Arts, Swinburne University of Technology Sarawak Campus, Malaysia</b>  The digital industrial revolution has been brought into the classroom, accelerated by the advent of the COVID-19 pandemic. IR4.0 has not only changed the talents needed by the engineering industry; learning has become democratised and more accessible. This leads to learning innovations incorporating IR4.0 tech, i.e. Education 4.0. The traditional educational approaches indeed need a make-over at making students skill-ready for the ever-evolving industrial revolution. Some of the main questions to be addressed in this plenary session are “How does Industry 4.0 affect the education industry, especially in engineering?”, “How can education institutions equip engineering students for IR4.0?”, and “What innovations are there to enhance learning in a digital engineering world?”		
3:20pm	<b>Education with Purpose and Impact</b> Professor Dr. Mou Ling Dennis Wong (Virtual) Deputy Provost, Heriot-Watt University Malaysia, Malaysia		
3:50pm	<b>Shifting from Education 3.0 to Education 4.0</b> Professor Dr. Nor Aziah Alias (Virtual) Professor of Teaching and Learning, Universiti Teknologi MARA (UiTM) & Member, Malaysian Society for Higher Education Policy and Research Development (PenDaPaT), Malaysia		

4:20pm	<b>Education Challenges For Society 5.0</b> Mr. Jamiran bin Salam Special Administrative Officer, Ministry of Education, Innovation and Talent Development (MEITD) Sarawak, Malaysia
4:50pm	Questions and Answers session
<b>Closing Ceremony</b>	
5:20pm	Closing Remarks by <b>The Honourable Datuk Roland Sagah, Minister of Education, Innovation and Talent Development Sarawak, Malaysia</b>
	Closing Remarks by <b>Ir. Dennis Ong, Organising Chairman of AAEC2022</b>
5:50pm	End of AAEC2022

**Note: Business Networking session will be available throughout the 3 days Programme**

### **SATELLITE HUB**

Tabung Ekonomi Gagasan Anak Sarawak (TEGAS) Digital Village (TDV) located at Sama Jaya High Tech Park is the confirmed location for the Satellite Hub.

Satellite hub will be subjected to SOPs issued by the Sarawak Government.

*Important note: The participants at the satellite hub will need to sign a liability waiver in view of the Covid-19 pandemic.*

### **AIRMEET (ONLINE PLATFORM)**



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## **CONTINUING PROFESSIONAL DEVELOPMENT (CPD) POINTS**

- Earn up to 21 hours CPD points issued by Engineers Australia and recognized by BEM and other engineering other institutions

**OFFICIAL WEBSITE:**

**[www.aaec2022.org](http://www.aaec2022.org)**



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