1-Day Seminar

DEMYSTIFYING SMART MANUFACTURING

📅 **26 Apr 2025 (Sat)**

⏰ **8.00am – 5.30pm**

📍 IEM Secretariat Office, 1-04-02 E-Gate
Lebuh Tunku Kudin 2, 11700 Penang

BEM CPD Hours: 7
Ref: IEM24/PG/416/S

Time	Programme	Speaker
8.00am - 8.50am	Registration	
8.50am - 9.00am	Opening Speech by IEM eETD Chairman	Ir. Dr. Huzein Fahmi B. Hawari
9.00am - 10.00am	Global Smart Industry Readiness Assessment Backbone for Manufacturing Digitization Transformation Journey	Dr. Thong Sze Yee
10.00am - 10.15am	Break	
10.15am - 11.15am	Unveiling Lean Manufacturing: The Art of Streamlining Success	Assoc. Prof. Dr. Yeap Gik Hong
11.15pm - 12.15pm	Navigating Cybersecurity Challenges in the Era of Digital Transformation	Assist. Prof. Dr. Ang Sau Loong
12.15pm - 1.00pm	Lunch Break *(Buffet Lunch provided)*	
1.00pm - 2.00pm	Metal 3D Printing & Its Applications in PETRONAS	Ts. Afizul Azha Bin Zakaria
2.00pm - 3.00pm	Harnessing Generative AI: A New Frontier for Electronic Engineers	Assoc. Prof. Dr. J. Joshua Thomas
3.00pm - 4.00pm	Enhancing Automation with IoT: Bridging Technology and Intelligence	Dr. Lee Gin Chong
4.00pm - 5.00pm	Energy Management System in Smart Factory Monitoring	Wong Shing Ho
5.00pm - 5.30pm	Certificate Presentation & Closing Remarks	

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Student	RM 60.00
Graduate / Senior (>65 y/o)	RM 120.00
Corporate Member	RM 160.00
Non-Member	RM 240.00

Coordinators

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This event is organized by:

The Institution of Engineers, Malaysia
Electronic Engineering Technical Division

Supported by:

The Institution of Engineers, Malaysia
Material Engineering Technical Division

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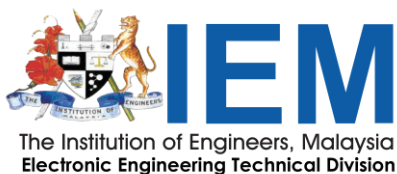
DEMYSTIFYING SMART MANUFACTURING

Synopsis

This intensive one-day seminar equips you with the knowledge and tools to navigate the exciting world of Smart Manufacturing, also known as Industry 4.0.

Embrace the Digital Transformation Journey

• **Assess Your Digital Readiness:** Learn a proven method (SIRI) to evaluate your company's digital maturity and identify areas for improvement. Benchmark against industry peers and set achievable goals for your digital transformation journey.

• **Optimize Operations with Lean Principles:** Discover how to eliminate waste and streamline processes for maximum efficiency and productivity. Gain insights into the core principles and tools of Lean Manufacturing to unlock significant cost savings and improve overall throughput.

• **Optimize Energy Consumption with Smart Factory Monitoring:** Discover how to achieve significant energy savings and reduce your environmental impact through advanced energy management systems. Learn about the benefits of real-time energy monitoring, predictive maintenance, and automation in optimizing energy usage and reducing costs.

Unlock the Potential of the Internet of Things (IoT)

• **Boost Automation with Smart Technologies:** Discover how the integration of IoT and artificial intelligence is transforming automation across industries. Explore the core components and current trends in IoT, along with its real-world applications in areas like predictive maintenance and process optimization. Gain insights into the challenges of security and interoperability, and explore future advancements in IoT poised to further enhance automation capabilities.

Safeguard Your Business in the Digital Age

• **Master Cybersecurity in the Era of Data Proliferation:** As digitalization becomes ever more prevalent, robust cybersecurity measures are crucial. This session explores the foundational principles of cybersecurity, equipping you to identify and mitigate evolving threats and vulnerabilities. Learn strategies to safeguard sensitive data and protect your organization from cyberattacks.

Unleash the Power of Cutting-Edge Technologies

• **Revolutionize Manufacturing with 3D Printing:** Explore the transformative potential of metal 3D printing through real-world case studies. Discover how this technology can overcome production bottlenecks, reduce costs, and accelerate product development cycles. Gain insights into its broader applications within the manufacturing sector, from optimizing production processes to driving innovation.

• **Harness the Potential of Generative AI:** Delve into the exciting world of Generative AI, a branch of artificial intelligence that creates entirely new data from existing information. Learn how this technology is revolutionizing electronic engineering by automating design processes, enhancing performance, and accelerating development. Understand the opportunities and challenges associated with Generative AI, and how to leverage it effectively for maximum benefit.

This comprehensive seminar provides a unique opportunity to gain a holistic understanding of the key strategies and technologies driving Smart Manufacturing. Network with industry peers, learn from leading experts, and discover how to leverage these advancements to propel your business to the forefront of the digital revolution. Join us and unlock the full potential of your manufacturing operations!

This event is organized by:

The Institution of Engineers, Malaysia
Electronic Engineering Technical Division

Global Smart Industry Readiness Assessment Backbone for Manufacturing Digitization Transformation Journey

By Dr. Thong Sze Yee

SPEAKER BIOGRAPHY

Dr. Thong Sze Yee's journey in the field of Industrial Engineering began at Intel, where she honed her skills and knowledge. Her dedication to the manufacturing industry, practicing Operational Excellence and Industrial Engineering (I.E.), spans over 20 years. Dr.Thong has held various managerial positions in Industrial and Manufacturing Engineering, Operation, Project Teams, Operational Excellence, and Industrial digitization. Her current role is heading the Flex global industrial engineering and digital twin organizations and facilitating external awards and recognitions in Operations Excellence and Industrial 4.0. She holds a B.S. in Industrial Engineering from Rochester Institute of Technology (R.I.T.), U.S.A., and earned her PhD in Manufacturing Engineering from the University Malaysia at Perlis (UniMAP). She is also a certified SIRI (Smart Industry Readiness Index) assessor. Her enthusiasm for the I.E. and technical field does not stop at the workplace; she serves as the I.E.M. (The Institution of Engineers, Malaysia) Electronics Engineering Technical Division committee member and the Institute of Industrial and Systems Engineers (IISE) Council member. She also provided talks at universities globally and other multinational corporations with global footprints.

SYNOPSIS

Industry 4.0, or smart manufacturing, is the realization of the digital transformation of the field, delivering real-time decision-making, enhanced productivity, flexibility, and agility to revolutionize how companies manufacture, improve, and distribute their products. However, many companies still struggle with prioritizing the focus of deploying digitization for the most optimum return. A mature assessment and prioritization methodologies are critical for a successful digitization journey. This talk will introduce a global measure for Industry 4.0 transformation maturity, SIRI (Smart Industry Readiness Index), which helps to increase awareness and set targets that organizations can work towards. It also provides a structured framework for manufacturers to benchmark against their peers, identify their strengths and weaknesses, prioritize development efforts and resources better, and track their progress on their digital transformation journeys. The method is endorsed by the World Economic Forum, which has over 850 manufacturing companies across more than 30 countries for 14 industry groups.
https://www.weforum.org/projects/global-smart-industry-readiness-index-initiative/

Unveiling Lean Manufacturing: The Art of Streamlining Success

By Assoc. Prof. Dr. Yeap Gik Hong

SPEAKER BIOGRAPHY

Assoc. Prof. Dr. Yeap Gik Hong has involved in tertiary education for more than 15 years. He is currently the Head of Operations (Batu Kawan campus), Head of School for the School of Engineering, Computing and Built Environment and Associate Professor at UOW Malaysia KDU Penang University College. He is a registered Chartered Engineer (CEng) under Engineering Council, United Kingdom (EC Council UK). He is also a certified public trainer under HRDF, International TRIZ Association (MATRIZ) Level 3 Practitioner, MyTRIZ Level 3 Practitioner and MyTRIZ Level 1 and Level 2 Instructor.

He received his Diploma in Mechanical Engineering from Sultan Abdul Halim Mu'adzam Shah Polytechnic (POLIMAS) in 2000. In conjunction with the 15th Convocation of POLIMAS, he received the Best Engineering Graduate Award from the late Sultan of Kedah, Sultan Abdul Halim Mu'Adzam Shah. After working in Singapore for 1.5 years, he further his study to UK and received BEng (Hons) Mechanical Engineering and Manufacturing Systems from the University of Lincoln in 2003 with First Class Honours. He also won the Valeac Prize for the Best Control Project on a Final Year for his academic work in the university. He later obtained his MSc in Advanced Materials and Manufacturing from the University of Hull, UK

in 2006 with Distinction. In September 2005, he was awarded the PhD Studentship and obtained his PhD in Electronic Engineering degree from the University of Hull in 2010.

SYNOPSIS

Lean Manufacturing is centred on preserving value with less work. It is a management philosophy derived mostly from the Toyota Production System (TPS). Lean manufacturing requires a relentless pursuit of reducing anything that does not add value to a product, aka waste. This makes continuous improvement, which lies at the heart of lean manufacturing, a must. However, many organizations are struggling to gain benefits from the implementation of Lean Manufacturing. Why is that so?

In this seminar, the history, principles, seven wastes and the important tools and concepts of Lean Manufacturing will be covered.

Navigating Cybersecurity Challenges in the Era of Digital Transformation

By Assistant Professor Dr. Ang Sau Loong

SPEAKER BIOGRAPHY

Dr Ang Sau Loong, is currently a n Assistant Professor at the Department of Computing and Information Technology, TARUMT. He has more than 15 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.

SYNOPSIS

In today's competitive business landscape, the rapid progression in data digitalisation has introduced a new concern: cybersecurity. Although digitalisation provides significant benefits and propels Industry 4.0 forward, it also raises serious issues regarding data theft and leaks, which can lead to irreversible damage. During this session, we will explore the foundational principles of cybersecurity, identifying current threats and vulnerabilities, and examining the critical importance of addressing these issues. This talk will encompass the protection of both personal and organisational data, emphasising secure network architecture and effective strategies to safeguard against cybercriminals and hackers.

Metal 3D Printing & Its Applications in PETRONAS

By Ts. Afizul Azha Bin Zakaria

SPEAKER BIOGRAPHY

Ts. Afizul's 19 years of experience have equipped him to work across diverse engineering fields. He began his career in plant maintenance before transitioning to mechanical automotive, where he led engine development and testing projects both domestically and internationally. Ts. Afizul is then broadened experience in business and strategic planning, leading business resumption and infrastructure initiatives. Currently, he head mechanical prototyping, managing 3D printing and CNC machining teams. He is a SME in additive manufacturing technology, having procured equipment, overseen installation, and led operations to deliver prototypes and components for projects. His expertise extends to technical consultations, co-authored publications, and industry presentations. He also holds various certifications and have received recognition for technical achievements and innovation.

SYNOPSIS

This presentation delves into the application of metal 3D printing technology in addressing complex engineering challenges within the oil and gas industry. Through real-world case studies at Petronas Research Sdn Bhd, the transformative impact of this technology is highlighted. By leveraging metal 3D printing, we successfully overcame critical production bottlenecks, reduced costs, and accelerated product development cycles.

A particular emphasis will be placed on the AISC "Active Cooling Case" project, where metal 3D printing played a pivotal role in solving a major hardware overheating issue. This innovative solution not only prevented significant financial losses but also paved the way for future revenue generation. Additionally, the presentation will explore how metal 3D printing enabled the rapid production of critical components for the BIOMEG project, resulting in substantial time and cost savings.

Beyond these specific case studies, the talk will provide insights into the broader applications of metal 3D printing in the oil and gas industry, including its potential for optimizing production processes, improving product performance, and driving innovation.

By sharing our experiences and lessons learned, this presentation aims to inspire and inform the audience about the exciting possibilities of metal 3D printing in addressing the industry's most pressing challenges.

Harnessing Generative AI: A New Frontier for Electronic Engineers

By Assoc. Prof. Dr. J. Joshua Thomas

SPEAKER BIOGRAPHY

J. Joshua Thomas is an Associate Professor in Computer Science at UOW Malaysia KDU Penang University College. He obtained his PhD (Intelligent Systems Techniques) in 2015 from University Sains Malaysia, Penang and Master's degree in 1999 from Madurai Kamaraj University, India. He served as Head and deputy head of department computing between the year 2012 to 2017. From July to September 2005, he worked as a research assistant at the Artificial Intelligence Lab in University Sains Malaysia. From March 2008 to March 2010, he worked as a research associate at the same University. His work involves intelligent systems techniques in which he adopts computational algorithm implementation in inter-discipline field areas. He is an editorial board member for the Journal of Energy Optimization and Engineering (IJEOE), Book author, guest editor for Applied Sciences, Computations (MDPI), Mathematics Biosciences and Engineering (MBE), Computer Modeling in Engineering & Sciences (CMES). He has authored and edited ten books (Wiley, Elsevier, DE and IGI publishers). He has published more than 70 papers in leading international conference proceedings and peer reviewed journals. Regular Invited, Planetary, Keynote speaker and workshop presenter in IAIM2019, LCQAI2021, ICRITCC'21 and IAIM2023. He obtained cutting edge technology professional certifications for current trends.

SYNOPSIS

Generative AI, a branch of artificial intelligence focused on creating new data from existing data, is increasingly transforming the field of electronic engineering. This technology leverages advanced models like Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and Diffusion Models to revolutionize how engineers design, test, and optimize electronic systems.

Generative AI represents a powerful tool in electronic engineering, offering the potential to accelerate design processes, enhance performance, and drive innovation. As the technology advances, it will continue to shape the future of electronic engineering, presenting both opportunities and challenges for engineers.

Generative AI is transforming electronic engineering by enhancing design automation, optimizing performance, and accelerating development processes. While it offers significant benefits in terms of efficiency, innovation, and cost savings, it also presents challenges related to data quality, integration, and ethical considerations. By addressing these challenges and leveraging the technology effectively, electronic engineers can harness the full potential of generative AI to drive progress and innovation in the field.

Enhancing Automation with IoT: Bridging Technology and Intelligence

By Dr. Lee Gin Chong

SPEAKER BIOGRAPHY

Dr. Lee Gin Chong joined UOW Malaysia, as senior lecturer since October of 2022. He is subject matter expect in developing new subjects and improving content for Artificial Intelligence and Applications, Microcontrollers and Microprocessors, C Programming, Python Programming, Digital Electronics, Embedded Systems, Robotics, and Electronic Circuit Design. He also supervises postgraduate and undergraduate projects in the areas of AI-enabled Systems, IoT-enabled Systems and Microcontroller-based Systems.

Dr. Lee is an experienced academician with more than 18 years research and teaching experience in engineering higher education industry since 2006. He continually exhibits and achieves excellent teaching, cultivating students' research interest and encouraging many students to excel in their academic. He also actively involves in Artificial Intelligence (Deep Learning, Neural Networks) and Human-Computer Interface Research Activities.

Dr. Lee graduated with a Bachelor (Hons) Electronics Engineering majoring in Computer (with CGPA 3.92) from Multimedia University in 2006. He earned his Master of Engineering Science in Robotics from the same university in 2012. In 2022, he received his doctorate (Doctor of Philosophy) in Artificial Intelligence from Universiti Malaya.

SYNOPSIS

The Internet of Things (IoT) is transforming automation through the integration of smart technologies and artificial intelligence. This talk will cover IoT's key components, current trends, and its real-world applications across industries, from manufacturing to smart cities. The discussion will emphasize the synergy between IoT and artificial intelligence, showcasing benefits in the field of automation such as predictive maintenance and optimization. Additionally, it will address challenges related to security and interoperability and explore future innovations in IoT for enhancing automation.

Energy Management System in Smart Factory Monitoring

By Wong Shing Ho

SPEAKER BIOGRAPHY

Howard Wong is an experienced system commissioning expert with over 10 years of expertise in the field of construction and engineering technology. He currently serves as a Project Manager at CET, a leading vendor of Energy Management System that provides complete solutions for energy management and power quality monitoring.

Throughout his career, Howard has demonstrated a strong understanding of system commissioning principles, including testing, verification, and optimization. His ability to effectively lead cross-functional teams and navigate complex challenges has earned him a reputation as a skilled problem-solver.

Specifically, Howard has extensive experience commissioning specialized systems such as PQMS, EMS, BMS, and EPMS. His deep knowledge of these cutting-edge technologies has enabled him to optimize system performance and deliver innovative solutions to clients.

CET supplies high-quality yet economical Energy Management Solutions, including Digital Power and Energy Meters, PQ Monitors, and intelligent Energy Management Systems catering to a wide range of industries since 1993.

Outside his system commissioning duties, Howard is an active contributor to industry associations and frequently shares his knowledge through lectures and workshops, positioning him as a respected figure in the field.

SYNOPSIS

As energy costs continue to rise and sustainability becomes a key priority, manufacturers must explore innovative ways to optimize their energy consumption. A smart factory monitoring system provides the necessary tools to achieve significant energy savings and reduce the environmental impact of industrial operations. By monitoring real-time energy usage data, identifying energy-intensive processes, and implementing predictive maintenance strategies, the system empowers manufacturers to make informed decisions and implement targeted efficiency measures. Through advanced analytics and automation, the smart factory monitoring system can automatically adjust and optimize energy usage, resulting in substantial cost savings and a reduced carbon footprint. This strategic investment enables businesses to stay competitive and environmentally responsible.