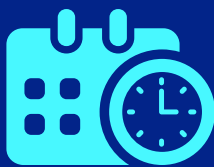# WEBINAR TALK

The Application of Artificial Intelligence (AI) and Machine Learning in Industrial Process Control

jointly organised with :
Electrical Engineering Technical Division, IEM &
Information & Communications Technology Special
Interest Group (ICTSIG), IEM

Details

16th August 2025
(saturday)
9am - 11am

zoom

Speaker
Muhammad Lukman Al Hakim

For More Information
www.myiem.org.my

BEM Approved CPD Hours : 2
Ref No. : IEM25/HQ/277/T (w)

Registration Fees
IEM Students : Free
EM Members : RM 15
Non-IEM Members : RM70

Synopsis

This paper explores the transformative role of Artificial Intelligence (AI) and Machine Learning (ML) in enhancing the efficiency, reliability, and adaptability of industrial process control systems. As industries transition toward Industry 4.0, the integration of AI/ML technologies is becoming essential for achieving predictive, autonomous, and optimized operations.

The study begins by outlining the limitations of traditional control systems, which often rely on static models and rule-based logic. It then introduces AI and ML as dynamic tools capable of learning from historical and real-time data to detect anomalies, predict equipment failures, and optimize control strategies.

Key applications discussed include predictive maintenance, process optimization, anomaly detection, digital twins and simulation. The paper also addresses implementation challenges such as data quality, model interpretability, and integration with legacy systems. It emphasizes the need for cross-disciplinary collaboration between domain engineers and data scientists. In conclusion, the paper argues that AI and ML are not just enhancements but foundational technologies for the next generation of industrial process control. Their adoption promises significant gains in operational efficiency, safety, and sustainability.

Speaker's Biodata

Muhammad Lukman Al Hakim is currently an Instrument and Control Specialist from PETRONAS with more than 19 years of experience in oil and gas industry. Through his leadership at PETRONAS, he has accomplished multiple mega initiatives to design, maintain and improve distributed control system (DCS), safety system, programmable logic control (PLC) system as well as cyber security governance and site implementation.

Muhammad Lukman is an adjunct lecturer and industry advisory panel (IAP) at few local universities in Malaysia. A prolific writer and speaker, he has spoken at numerous technical conferences in Malaysia, Singapore, Australia and United States.

He is internationally certified as Functional Safety Engineer (TUV Rheinland), Gold Tripod Beta Practitioner, LEAN Six Sigma Practitioner, IECEx 60079 Competent Person and holds an Engineering Bachelor's Degree (Electrical and Electronic) from University of Melbourne, Australia.