



Virtual Talk: Enhancing Automation with IoT: Bridging Technology and Intelligence

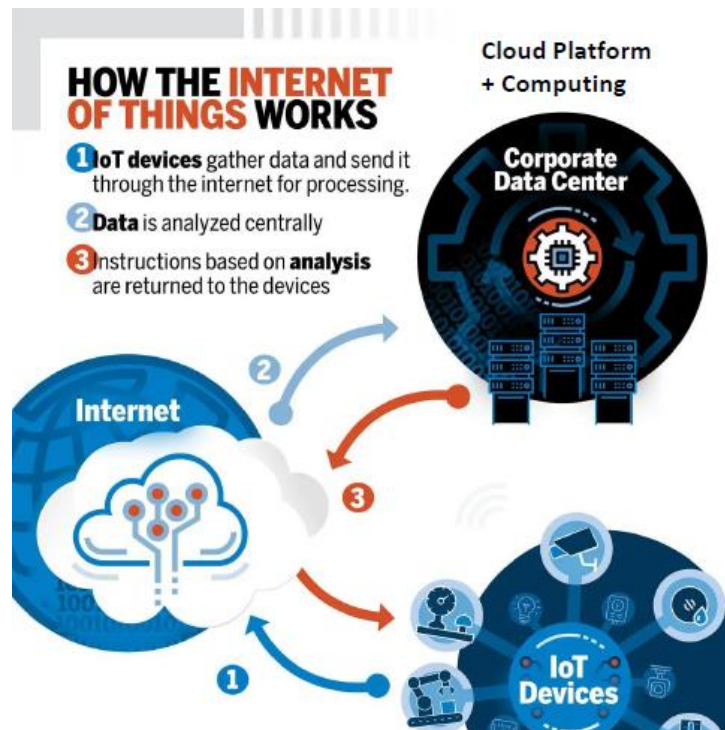
By

Prof. Dr. Yeap Gik Hong

He is an eETD committee member for 2025/2026 session.

The talk “Enhancing Automation with IoT: Bridging Technology and Intelligence” provided a comprehensive overview of how the Internet of Things (IoT), and Artificial Intelligence (AI) are transforming automation in industry and daily life. This evening virtual talk was attended by 20 participants including the speaker, moderator and IEM Penang Branch Secretariat.

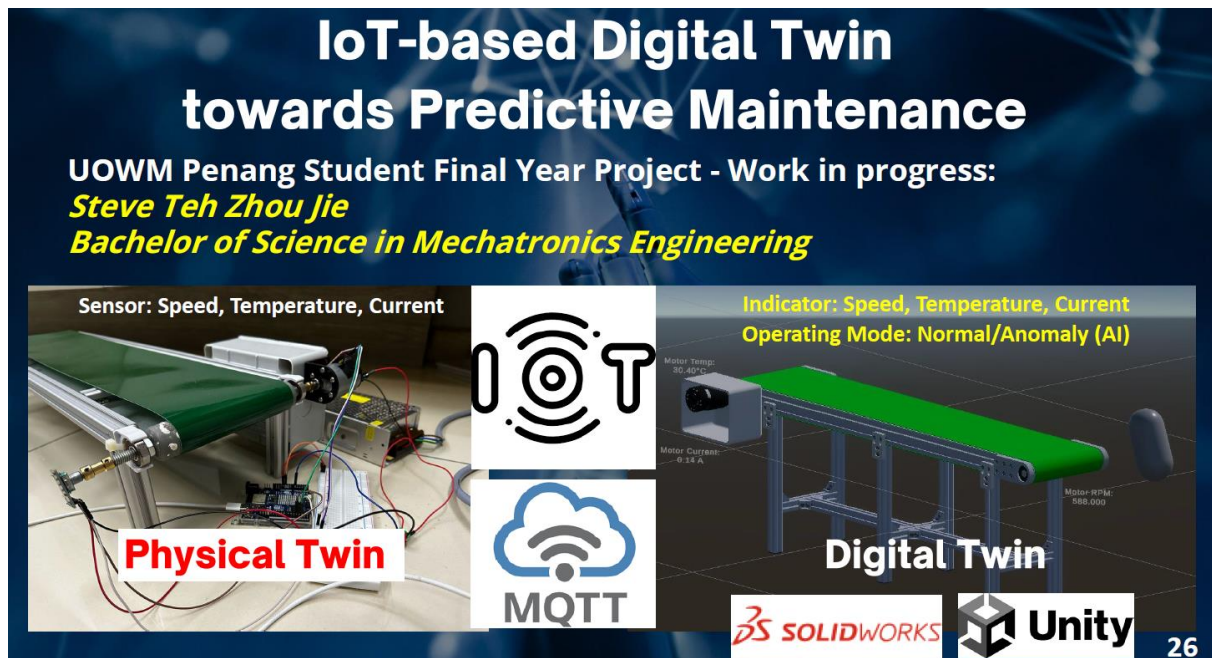
Dr. Lee began by explaining the foundational concepts of IoT, describing it as a network of interconnected devices that collect and exchange data through sensors, cloud computing, and various connectivity technologies. The talk highlighted the four main types of IoT applications; consumer, commercial, industrial (IIoT), and infrastructure IoT where each offers unique solutions to everyday and industrial challenges as shown below.



How the Internet of Things (IOT) Works

The presentation then transitioned to AI, outlining its capabilities such as learning, reasoning, and decision-making. Dr. Lee elaborated on different machine learning approaches, including supervised and unsupervised learning, and their applications in areas like fault detection and anomaly detection.

A notable focus was on the synergy between IoT and AI in enabling predictive and prescriptive maintenance. By using real-time sensor data, AI can forecast equipment failures (predictive maintenance) and even recommend specific actions to extend machine life or reduce downtime (prescriptive maintenance). The project developed by UOWM student by Steve Teh Zhou Jie, BSc in Mechatronics Engineering was highlighted, demonstrating the practical integration of IoT and AI to predict anomalies based on indicators like speed, temperature, and current as shown below.



IoT-based digital twin towards predictive maintenance project by UOW Malaysia, KDU Penang University college student

The talk concluded with a discussion on the next frontier: Hybrid Human-Artificial Intelligence (HHAI). Dr. Lee emphasised that combining human expertise with AI's analytical capabilities can enhance creativity, improve decision-making, and support more sustainable outcomes. However, he also cautioned about the challenges of trust, ethics, and system complexity. Overall, the session offered insightful perspectives on how IoT and AI together drive smarter, more efficient, and more sustainable automation.



Group photo of the evening virtual talk