①**Assoc. Prof. Rohaya Latip**, Universiti Putra Malaysia, Malaysia

Title: Multi-objective algorithms for effective resource management in edge-fog-cloud computing

Abstract: Edge-Fog-Cloud computing is a platform that facilitates the processing of IoT tasks that generate a massive amount of data from edge computing. Small or delay-sensitive tasks should be sent to fog computing, while complex or large-scale tasks must be transferred to the cloud data center due to its enormous capabilities in computation and storage. However, workload allocation remains a critical concern, involving the allocation of sensitive tasks to edge-fog computing and large complex tasks to edge-cloud computing to meet user requirements based on their specific characteristics. The diversity of task attributes, such as input length, computing unit requirements, and sensitivity to delays, presents challenges in distributing workloads across different computing layers, resulting in both load overhead and increased transmission delays. The second crucial issue is task scheduling, which revolves around efficiently scheduling tasks to suitable resources across various computing layers while considering the unique characteristics of each task. Inefficient scheduling can result in increased transmission delays in edge-cloud computing, particularly due to the long distances involved, as well as higher energy consumption in edge-fog computing. The third problem concerns task offloading. When processing massive Edge tasks, computational devices may unexpectedly shut down due to the network's dynamic nature or power issues, leading to the interruption of task execution and incomplete processing. Offloading uncompleted tasks randomly to any computational node for execution can result in inefficient resource utilization and increased energy consumption. Therefore a proposed Task Scheduling algorithm, and Task Offloading algorithm are designed and experimented to reduces energy consumption in edge-fog computing by an average of 32% and the transmission delay on edge-cloud computing by an average of 22% compared to another approach.

②**Prof. Lide Fang,** Hebei University of Technology, China

Title: Research on remote metering and calibration based on modern communication and network technology

Abstract: There are two problems in the traditional method of quantity value transmission and traceability. One is that it must be carried out offline. The working measuring instruments must be removed regularly and sent to the corresponding technical institutions for verification or calibration under the specified experimental environment, which affects the normal production process. The other is that they are both static or steady-state testing processes, and can only obtain the basic error of the instrument under the reference working conditions, Additional errors in field applications cannot be obtained. The development of instrument Internet of things technology makes people see the hope to

solve these two problems. If the remote value transmission and traceability system of measuring instruments can be established by using Internet of things technology, the additional error of instruments can be obtained, which fundamentally ensures the accuracy and reliability of on-site measurement data. This paper investigates the research status of remote value transmission and Traceability Technology in the field of measurement instruments at home and abroad, puts forward three ways to realize remote value transmission in the field of measurement, namely, transmission standard table, standard table on site and transmission value method, and compares the difficulty of these three ways, The research progress of remote value transmission and Traceability Technology Based on Electrical and optical methods is introduced.

③**Prof. Zuriati Ahmad Zukarnain,** Universiti Putra Malaysia, Malaysia

Title: Post-quantum cryptography (PQC) authentication for a scalable and secure communication in 5G Networks.

Abstract: Mobile communication changes transmission capability and speed every year with the passage of time and generation. 5G is the modern way of mobile communication which is using across the world and being used by different numerous people, it is required to implement security mechanisms that safe the transmission of data to the client. The 5G Mobile communication utilize various nodes to offer secure and on-demand connectivity to other devices. The authentication of nodes in 5G networks based on classical cryptography, are exposed to eavesdropping in communication. The emergence of quantum authentication has attracted significant interest and has become active research in the Post-quantum Cryptography (PQC) area. The PQC is strengthened by the unconditional security in quantum mechanics law as proven by the non-cloning theorem and Heisenberg Uncertainty theory. The PQC protocol aims to establish a secure and scalable framework for multiple nodes in 5G communication. This robust protocol capable of withstanding eavesdropping and diverse attacks, developing, and addressing the scalability issues.

④**Prof. Weiqiang Xu**, Zhejiang Sci-Tech University, China

Title: Challenges, Solutions, and Prospects of Communication Technologies in Industrial Internet of Things

Abstract: This talk presents an overview of the key challenges, innovative solutions, and future prospects of communication technologies in the Industrial Internet of Things (IIoT). With the integration of intelligent devices and systems in industrial processes, the IIoT has emerged as a transformative force, enabling real-time data exchange, remote monitoring, and optimized decision-making. However, this integration poses significant challenges, including ensuring reliable and secure data transmission,

managing network complexity, and addressing interoperability issues. To overcome these challenges, various cutting-edge solutions have been proposed, ranging from enhanced wireline and wireless protocols to advanced network techniques. The talk provides an in-depth analysis of these solutions, discussing their applicability, effectiveness, and potential limitations. Furthermore, it explores the future prospects of IIoT communication technologies, emphasizing the need for continued innovation and standardization efforts to realize the full potential of the IIoT in driving industrial automation and digitalization.