

Tutorial Proposal

IEEE 20th International Conference on Industrial Informatics (INDIN 2022)

Tutorial Title:

"Smart Management and Standardization for Industrial Internet of Things (IIoT)"

Tutorial presenters:

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1. KEYWORDS

Industrial Internet of Things, Automated management, Standardization, Smart city applications

2. AIMS AND LEARNING OBJECTIVES

To showcase the state-of-the-art automated management of IIoT based smart applications, and highlight the corresponding impact of the emerging standardization for IIoT (e.g., IEEE P2668, IEEE 1451.5.5, etc.)

3. SHORT SUMMARY OF CONTENTS

Industrial Internet-of-Things (IIoT) has witnessed the prosperity of network softwarization/virtualization, artificial intelligence (AI), etc. Emerging communication technologies have targeted towards the promised Massive Machine Type Communications (mMTC), eMBB (enhanced Mobile Broadband), and URLLC (Ultra Reliable Low Latency Communications) in 5G, e.g., contributed by network automation, Low power wide area network (LPWAN), and mmWave, respectively. Diversified technologies and new requirements also lead to urgent demands towards standardizing the IIoT based emerging applications. This tutorial will discuss the cutting-edge technologies for automated management of IIoT based smart applications, e.g., network automation in network level, LPWAN deployment in physical layer, and corresponding multi-layer coordination. Besides, the emerging IEEE standards (e.g., IEEE2668, IEEE1451.5.5, etc.) will also be discussed, with their corresponding impact towards standardizing the aforementioned IIoT based technologies and applications. Therefore, this tutorial will provide standardization guidance to industrial and academic researchers, towards smart management of IIoT based applications.

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4. TARGET AUDIENCE

Industrial and academic researchers who are interested in IIoT based automated and smart management, as well as seeking standardization guidance towards the emerging IIoT technologies.

5. DURATION

90 min.

6. SHORT BIOGRAPHY OF SPEAKER

Dr. Hao Ran Chi is currently a Researcher with the Instituto de Telecomunicações and Universidade de Aveiro, Portugal since 2019. Before that, he is a research scholar in North Carolina State University. His research interests include 5G (and beyond), IoT infrastructure development, wireless communication, eHealth, evolutionary optimization, and machine learning.

Dr. Chung Kit Wu received his B.Eng. degree in electronic and communication engineering, with first-class honors, from City University of Hong Kong in 2014, and obtained his Ph.D. degree from the same university in 2020. His research interest includes Internet-of-things (IoT), standardization, digital signal processing, machine learning, healthcare applications, optimization, and complex network.

Dr. Hongxu Zhu is currently a Research Fellow of the HLT lab in the Department of Electrical and Computer Engineering, National University of Singapore. His research interests include IoT, smart application development, machine learning.

Ms. Yang Wei received the B.Eng. degree in Measurement Control Technology and Instruments (at top 5%) from China Ji Liang University in 2016. She received the MSc degree in Electronics from the University of Edinburgh in 2017. Currently, she is working toward the Ph.D. degree at the Department of Electrical Engineering, City University of Hong Kong. Her research interests include artificial intelligence, complex network, wireless communication, machine learning, and Internet of Things (IoT) technology.

Dr. Kim-Fung Tsang received the Ph.D. degree in Electrical Engineering from the University of Wales College of Cardiff (formerly known as the University of Wales Institute of Science and Technology), Cardiff, U.K., in 1995. He is currently an Associate Professor with the Department of Electrical Engineering, City University of Hong Kong, specializing in IoT. KF authored or coauthored about 300 technical papers and four books/chapters and a few patents. Dr. Tsang is a Fellow of the The Hong Kong Institution of Engineers, a Chartered Engineer and a Member of IET, an Associate Editor and a Guest Editor of the IEEE Transactions On Industrial Informatics, an Associate Editor of IEEE Transactions On Industrial Electronics, and an Associate Editor of the IEEE Industrial Electronics Magazine.