**INDIN 2024 Special Session on**

**SS 02 – Zero-Touch Network and Service Management Towards Industry 5.0**

# Call for Papers

Industry 5.0 is foreseen to upgrade Industry 4.0 towards placing human-being back to the center of industrial systems and applications. In particular, after the popularization of artificial intelligence (AI) in Industry 4.0, Industry 5.0 stems from pursuing an optimal collaboration and interoperability between humans and intelligent systems. Along with the industrial evolution, perceived emerging industrial services in Industry 5.0 (e.g., intelligent healthcare, supply chain, smart manufactory, etc.) have also been highlighted as the key targets of the communication network evolution from 5G towards 6G, where zero-touch network and service management has showcased its proliferation in Information and Communications Technology (ICT) services, simultaneously with the growing trends of AI. Literally, promising to achieve 100% network automation, zero-touch network and service management not only provides a low-cost reliable communication to industrial domain, but also gains potential of ultra-high resilience, with the elimination of human’s biased and unstable judgement. However, on the other hand, it somehow generates conflicts with the goal of Industry 5.0, towards human-machine harmony, when no-human involvement is considered. Therefore, plenty of emerging challenges have been recognized, regarding the very early stage of the development/standardization of Industry 5.0, zero-touch network, and 6G. Typical challenges include limited automation of current AI technologies, lack of datasets in the network perspective, AI algorithmic interoperability, computation complexity regarding the requirement of ultra-low latency and high energy efficient network towards Industry 5.0, harmonization of multi-operator/tenancy/service scenarios, etc. This Special Issue focuses on tackling these challenges brought by zero-touch network and service management, considering the emerging applications and corresponding requirements towards Industry 5.0.

Topics of interest include, but are not limited to:

- Machine learning/deep learning for zero-touch network and service management

- Network deployment/architecture/protocol (e.g., SDN, network slicing) for zero-touch networks

- AI-based big data analytics for emerging applications towards Industry 5.0 applications (e.g., healthcare, agriculture, supply chain, manufactory, etc.)

- Network as a Service (NaaS) based autonomous networks towards Industry 5.0

- Security and privacy for zero-touch network and service management

- Integrated testbed and case studies for pervasive AI and network automation for Industry 5.0

**Submissions Procedure:** All the instructions for paper submission are included in the conference website[**https://indin2024.ieee-ies.org/**](https://indin2024.ieee-ies.org/)

**Deadlines:**

Deadline for submission of papers: **April 01, 2024**

Notification of acceptance of papers: **May 18, 2024**

Final manuscripts due: **Early June, 2024**

**IEEE IES Technical Committee Sponsoring the Special Session (if any):**

IEEE IES Technical Committee in Building Automation, Control and Management

**Principal Organizer: Hao Ran Chi (haoran.chi@ua.pt)**

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**Hao Ran Chi has been working as a researcher in the Instituto de Telecomunicacoes and Universidade de Aveiro, Portugal since Aug 2019. Before that, he obtained his Ph.D. from the City University of Hong Kong in July 2018, and his Bachelor with First Class Honor from the same university in 2013. He worked as a research scholar in the North Carolina State University after his Ph.D. graduation. Dr. Chi has published more than 50 technical papers in high IF journals and well-acknowledged conferences. He is the Guest Editor for IEEE Transaction on Industrial Informatics, IEEE Transactions on Consumer Electronics, Journal of Sensor and Actuator Networks, and Editorial Board Member of Sensors, Current Chinese Science. He is the Vice Chair of IEEE Standards of P1451.5.5 and P1451.5.6 Working Group, and Sub-TC Chair (Automated Network Management for IIoT) of IEEE IES Technical Committee on Building Automation, Control, and Management. Besides, he has experience organizing multiple international conferences such as IEEE ICC, IEEE IECON, IEEE INDIN, IEEE ISPCE, etc. Dr. Chi has been awarded/won competitions by academic and R&D organizations (e.g. IET, HKIE, HK Education Bureau). Dr. Chi has also successfully coordinated and managed many EU and Portugal projects. During his career, Dr. Chi has obtained expertise knowledge on 5G (and beyond), cloud/fog resource management, IoT infrastructure development, eHealth, and machine learning.

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Kim-Fung Tsang received the Ph.D. degree in microwave/millimeter wave engineering from the Cardiff University of Wales, Cardiff, U.K., in 1995. He has close ties with industry, and is working actively on radio frequency identiﬁcation (RFID) (ZigBee) for numerous applications, including energy management system for utilities, metering infrastructure, security, and ofﬁce/home automation. He is currently an Associate Professor as well as the Director of Wireless Sustainability Center, Department of Electronic Engineering, City University of Hong Kong. He has published more than 150 technical papers. Dr. Tsang received the CityU Applied Research Excellence Award, the ﬁrst Hong Kong Science and Product Innovation Competition, and the World Chinese Invention Exposition. He also received the EDN Asia Innovator Award, the Ericsson Super-Wireless Application Award, the Best Award from Freescale Semiconductor, the Innovation China Outstanding Entrepreneur Award, and the Excellent Product Award from the China Hi-Tech Fair. He is a fellow of the Hong Kong Institution of Engineers (HKIE).

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Wing-Kuen Ling received the B. Eng. (Hons) and M. Phil. degrees from the department of Electronic and Computer Engineering, the Hong Kong University of Science and Technology, in 1997 and 2000, respectively, and the Ph. D. degree in the department of Electronic and Information Engineering from the Hong Kong Polytechnic University in 2003. In 2004, he joined the King’s College London as a Lecturer. In 2010, he joined the University of Lincoln as a Principal Lecturer and promoted to a Reader in 2011. In 2012, he joined the Guangdong University of Technology as a Full Professor. He is a Fellow of the IET, a senior member of the IEEE, a China National Young Thousand-People-Plan Distinguished Professor and University Hundred-People-Plan Distinguished Professor. He serves in the nonlinear circuits and systems technical committee, the digital signal processing technical committee and the power and energy for circuits and systems technical committee of the IEEE Circuits and Systems Community, as well as the cloud and wireless systems for industrial applications technical committee of the IEEE Industrial Electronics Society. He was awarded the best reviewer prizes from the IEEE Instrumentation and Measurement Society in 2008 and 2012. He has also served as the guest editor-in-chief of several special issues of highly rated international journals, such as the IET Signal Processing, the Circuits, Systems and Signal Processing, the HKIE Transactions and the American Journal of Engineering and Applied Sciences. He is currently an associate editor of the IET Signal Processing, the Circuits, Systems and Signal Processing, the Journal of Franklin Institute, the Measurement, the Measurement: Sensors, the Journal of Industrial Management, and the Frontiers in Signal Processing. He has published an undergraduate textbook, a research monograph, five book chapters, 220 internationally leading journal papers and 147 highly rated international conference papers as well as owned 50+ China patents. His research interests include the time frequency analysis, the optimization theory, the symbolic dynamics, the biomedical signal processing and the multimedia signal processing.

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