IEEE Transactions on Industrial Informatics

CALL FOR PAPERS

for Special Section on

AI Empowered Communication and Computing Systems for Industrial Internet of Things

Theme: Internet of Things (IoT) expects to incorporate massive machine-type communication (MTC) devices, such as sensors, controllers, and actuators, and allows them to interact with each other for data acquisition and analysis. As one of the most important applications of IoT in industry sector, Industrial Internet of things (IIoT) connects industrial assets to collect and process data in industrial environments to enable intelligent operation, such as industrial monitoring, automation, and control. In IIoT, data collected from various devices need to be collected and processed in a timely, reliable and efficient manner. To meet the stringent requirements of IIoT, advanced communication and computing technologies expect to play significant roles. For data collection, heterogeneous communication and networking technologies such as dynamic spectrum access, LoRa, Zigbee, and 5G can be employed. For data processing, edge/fog computing and cloud computing can provision computing and storage resources for IIoT. With fog/edge computing in proximity of data sources, data can be preprocessed and computational tasks can be executed locally, which can promote context-awareness and achieve low-latency. Howevever, there are many technical challenges to address in IIoT. The industrial environment itself exhibits high randomness and dynamics. In addition, vast amounts of data are collected in IIoT, which are complex in terms of scale, structure, and content, need to be processed in real-time for fast response. Last but not least, incorporating storage and computation resources in IIoT, it is very challenging to manage heterogeneous resources in an efficient way to meet diverse service requirements. In such a complex and dynamic system, artificial intelligence (AI) holds great potential to address the aforementioned challenges. AI can help analyze massive industrial data to provide insights and predictive analyses in real-time, and facilitate efficient decision making through learning to intelligently manage and control the system for IIoT. This special section solicits original research and practical contributions from both industry and academia to advance the IIoT, including network modeling and architecture, AI algorithms for various layers, intelligent resource management, big data driven edge systems, orchestration of edge and cloud servers.

This special section will focus on (but not limited to) the following topics:

- AI for efficient communications in IIoT
- AI for convergence of communication and computing in IIoT
- AI for resource management in IIoT
- AI for orchestration of edge and cloud in IIoT
- AI aided fog computing for latency-aware IIoT applications
- AI-aided computation offloading
- AI aided service mitigation and mobility management in IIoT
- Multi-agent learning in edge computing in IIoT
- Machine learning algorithms for IIoT
- Testbed of AI algorithms for edge computing in IIoT
- AI aided security and privacy provisioning mechanisms for IIoT

Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE Transaction on Industrial Informatics http://www.ieee-ies.org/pubs/transactions-on-industrial-informatics . Please submit your manuscript in electronic form through Manuscript Central web site: https://mc.manuscriptcentral.com/tii . On the submitting page #1 in popup menu of manuscript type, select: SS on **AI Empowered Communication and Computing Systems for Industrial Internet of Things**

Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Regular manuscript length is 8 pages.

Note: The recommended papers for the section are subject to final approval by the Editor-in-Chief. Some papers may be published outside the special section, at the EIC discretion.

Timetable:

Deadline for manuscript submissions **May10, 2020**

Expected publication date (tentative) November 2020

Guest Editors:

- Dr. Ning Zhang, Texas A&M University at Corpus Christi, USA ning.zhang@ieee.org
- Prof. Yonghui Li, University of Sydney, Australia yonghui.li@sydney.edu.au
- Dr. Yulei Wu, University of Exeter, UK Y.L.Wu@exeter.ac.uk
- Prof. Qinyu Zhang, Harbin Institute of Technology (Shenzhen), China zqy@hit.edu.cn