IEEE Transactions on Industrial Informatics
CALL FOR PAPERS
for Special Section on
Digital Twin for Industrial Internet of Things

Theme: Industrial IoT can revolutionize industrial operation by interconnecting numerous machines, analytics sectors, and people at work. Through a deep cooperation of these components, industrial IoT brings new business opportunities and incredible productivity to applications such as smart robotics, future factories, and automotive manufacturing. The success of industrial IoT relies on the dynamic perception and intelligent decision-making, which is difficult to conceive due to the heterogeneous industrial devices, the complex industrial environment, and the sophisticated business operation strategy. Digital twin, as an emerging digitalization technology, provides a feasible solution to capture the complex industrial environment and make predictive strategies. It builds a virtual representation of industrial entities and manufacturing process, updated with the physical entities at a specified fidelity and frequency. For example, for industrial manufacturers, digital twins can create digital models of substantial machines, to help us make holistic understanding of how these machines work, make possible modification or predictive maintenance, and take effective actions before devoting much resources and expenditure.

The integration of digital twins and the industrial IoT enables a digital revolution of industrial automation. Researchers from industry and academia have focused on the virtualization and digitalization of industrial objects, while there are yet a number of challenges like high-fidelity modularity of digital twins, synchronization between digital and physical objects, interaction and networking among digital twins, scalable and resilient design of digital twin for industrial IoT. To fill the gap, this special section solicits high quality and unpublished work on recent advances in Digital Twins for Industrial IoT.

This special section will focus on (but not limited to) the following topics:
- New computing architecture for digital twin in industrial IoT
- New communication mechanisms for digital twin in industrial IoT
- New scalable and resilient digital twin for industrial IoT
- Advanced AI/ML models for digital twins in industrial IoT
- Advanced data mapping-communication-computation architecture for digital twins empowered industrial IoT
- Advanced softwarization and virtualization technologies for digital twin in industrial IoT
- Advanced networking among digital twins for industrial IoT
- Fault tolerance for digital twin in industrial IoT
- Cross layer design for digital twin in industrial IoT
- QoS/QoE improvement for digital twins empowered industrial IoT
- Performance analysis of digital twins for industrial IoT
- Resource allocation/management for digital twins empowered industrial IoT
- Applications and testbeds of digital twin for industrial IoT

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 **Digital Twin 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   **May 30, 2022 (Extended to Jun. 30, 2022)**
Expected publication date (tentative)   October 2022

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