IEEE Transactions on Industrial Informatics

CALL FOR PAPERS

for Special Section on

Next-Generation Network Automation for Industrial Internet-of-Things in Industry 5.0

Theme: Network automation technologies have been bred by the advent of network virtualization and softwarization of 5G, as well as the prosperity of artificial intelligence (AI), which have broadly covered automated and dynamic resource management regarding communication, computation, spectrum, etc. The conceived enhanced efficiency with reduced simplicity and operating expense (OPEX) has also lead network automation to being emphasized for the deployment of Industrial Internet-of-Things (IIoT) in Industry 4.0, and further towards pervasive AI and human-robot-interaction and -collaboration based Industry 5.0. For instance, 3GPP has launched the corresponding standards by introducing the Network Data Analytics Function (NWDAF), highlighting the importance of network automation in 5G based IIoT. It is inevitable that network automation will achieve comprehensive automated network configuration, organizing, optimizing, and healing for IIoT evolution from Industry 4.0 towards Industry 5.0. Hitherto, plethora of challenges for next-generation network automation technologies regarding the conceived IIoT development have to be tackled, regarding the stricter requirements of Industry 5.0 compared with Industry 4.0. Inevitable conflicts will be embraced throughout diverse layers of network infrastructure, including intent-based automated network configuration vs. big data based traffic/computation burden by user ultra-densification; network softwarization and virtualization vs. privacy/security concerns, etc.; Besides, advanced spatial, temporal, and spectral network automation technologies for handling highly-distributed heterogeneous network management will also be significantly demanded, with the foreseen popularity of multi-dimensional RAN and heterogeneous distributed computing resources in IIoT.

This Special Session on "Next-Generation Network Automation for Industrial Internet-of-Things" focuses on the development and applications of advanced technologies and methodologies for the deployment of 5G (beyond) IIoT in Industry 4.0, towards pervasive AI and human-robot-interaction and -collaboration based Industry 5.0.

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

Manuscript Preparation and Submission

*Theoretical modeling, analysis and development for network automation for IIoT
*Distributed (e.g., edge/fog computing, blockchain-based) AI/ML based network automation technologies and topology analysis
*Automated multi-dimensional RAN deployment for emerging technologies of 5G/6G (e.g., THz, LPWAN: NB IoT, LoRa…)
*Intent-based automated data recognition, identification and configuration of network automation for IIoT towards Industry 5.0
*Novel beyond 5G/6G based softwarization/virtualization technologies for IIoT network automation
*Algorithm development of optimal spatial, temporal, and spectral based network automation for IIoT
*Data accuracy analysis and self-healing technologies for IIoT network automation
*Standardization and analysis of blockchain network automation for IIoT towards Industry 5.0
*Data security/Privacy-aware network automation for IIoT (throughout physical layer to application layer)
*Pervasive AI/ML based technologies and human-robot-collaborated applications for network automation for IIoT
*Applications and testbeds of network automation for IIoT, e.g., smart agriculture/fisheries, smart logistics and mobility, smart healthcare, robotics and automation, facility management, product safety, standards, etc.

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 **Next-Generation Network Automation for Industrial Internet-of-Things in Industry 5.0**

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	**March 30, 2022**
Expected publication date (tentative)	September 2022

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