

Call for Papers

IEEE Journal of Selected Topics in Signal Processing

Special Issue on Distributed Signal Processing for Edge Learning in B5G IoT Networks

Due to the explosive growth of data traffic in Internet-of-Things (IoT), machine learning and data driven approaches are expected to become a key enabler to fuel the development of wireless networks beyond 5G (B5G). Standard machine learning approaches require centralizing the training data on a single data center, e.g., a cloud. However, due to privacy constraints and limited communication resources for data transmission, it is impractical for all wireless devices to transmit all their collected data to a center that implements centralized machine learning algorithms for data analysis and inference. This leads to the emergence of a fast-growing research area, called edge learning, which can deeply integrate the two major areas: wireless communication and machine learning. Edge learning includes state-of-the-art federated learning and multi-agent reinforcement learning methods, etc. It is widely expected that advances in edge learning would provide a platform for implementing artificial intelligence (AI) algorithms over edge devices in B5G IoT networks. Distributing AI at network edge allows edge devices to collaboratively train a large-scale AI model by exploiting local data and distributed processors. These new paradigms generate enormous data traffic, placing a heavy burden on the already congested radio access networks. This special issue seeks to bring together researchers from academia and industry to introduce the latest advances in edge learning to the signal processing and communications communities. Topics of interest include, but are not limited to:

- Distributed signal processing for edge learning in IoT networks
- Network architectures and protocols for edge learning in IoT networks
- Resource management for distributed computation and communication in IoT
- Integrated distributed optimization with edge learning in IoT networks
- Distributed multi-agent reinforcement learning for network control in IoT networks
- Centralized and distributed data storage for edge learning
- Over-the-air computation for edge learning in IoT networks
- Decentralized transmission optimization for edge learning in IoT networks
- Privacy and security issues on semantic communications with edge learning in IoT
- Experiments and testbeds on edge learning in IoT networks

Prospective authors should follow the instructions given on the IEEE JSTSP webpages:

<https://signalprocessingsociety.org/publications-resources/ieee-journal-selected-topics-signal-processing>

and submit their manuscripts at: <https://mc.manuscriptcentral.com/jstsp-ieee>

Important Dates

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Revised manuscript due: September 30, 2022 Second review completed: November 15, 2022

Final manuscript due: December 31, 2022 Publication: March 31, 2023

Guest Editors

Wei Xu (Lead Guest Editor), Southeast University, China. [wxu@seu.edu.cn](mailto:w Xu@seu.edu.cn)

Derrick Wing Kwan Ng, University of New South Wales, Australia. w.k.ng@unsw.edu.au

Marco Levorato, University of California Irvine, USA. levorato@uci.edu

Yonina Eldar, Weizmann Institute of Science, Israel. yonina.eldar@weizmann.ac.il

Mérouane Debbah, Technology Innovation Institute, United Arab Emirates. merouane.debbah@tii.ae