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ACM Transactions on Sensor Networks

Special Issue on Distributed and Collaborative Learning Empowered Edge Intelligence in Smart City

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Smart city serves as an important concept utilizing modern artificial intelligence (AI) techniques, such as machine learning and deep learning models, to improve urban behavior and capabilities for the next-generation civilization constructions. Typical smart city infrastructure systems include smart transportation systems, smart buildings, smart grid, smart medical systems, and smart housing systems, etc. The smart operation systems are among the most popular research topics in the fields of information technology (IT), AI, Internet of things (IoT), cyber-physical systems (CPS), and intelligent systems, etc. However, when tremendous amount of data is collected in the early stage of development of smart city, there exists an urgent demand of decentralized training and learning technologies, since a centralized system is almost not feasible for big data management and analytics in smart cities.

Distributed learning (DL) and collaborative learning (CL) are classic decentralized learning paradigms managing and processing big data and heavily-loaded resources for smart cities, where DL focuses on learning mechanisms on different clients through an IoT network system, and CL focuses on the integration of the distributed learning on different clients. In particular, the emergence of edge intelligence provides DL and CL with the computational power of the heterogeneous devices on the outer edge of the IoT network, which leverages the robustness optimization of network topology for IoT, and consequently achieves higher efficiency and better performance.

In summary, gathering novel research works related to emerging theories, techniques, and algorithms in DL and CL for edge intelligence enabled system design and application development in modern smart cities is the main purpose of this special issue. We encourage the submission of papers with new results, methods, applications and solutions in multiple related disciplines, such as mobile and ubiquitous computing, privacy-aware computing, hybrid human-machine computing, AI, big data analytics, end-edge-cloud system, IoT, blockchain, to sort out the edge intelligence implementation for smart cities.

Topics

Topics of interest include (but are not limited to):

- Distributed and collaborative learning in intelligent end-edge-cloud systems
- Distributed and collaborative learning in smart CPS
- Distributed and collaborative learning in mobile and ubiquitous computing
- Distributed and collaborative learning with intelligent IoT for smart healthcare
- Distributed and collaborative learning based computer vision in smart cities
- Distributed and collaborative learning based speech assistants in smart cities
- Distributed and collaborative learning solutions on trust system development
- Edge intelligence for smart environment design, construction and maintenance
- Edge intelligence in daily living support
- Edge intelligence in sustainable computing
- Edge intelligence in distributed design
- Edge intelligence in cyber security and privacy concerns

- Intelligent sensing data applications in smart cities
- Big data analytics for smart city management
- Knowledge-based or agent-based models for intelligent systems
- Distributed IoT in smart services
- Intelligent devices and process-aware information systems in smart cities

Important Dates

- Open for submissions: Aug. 31, 2022
- Submissions deadline: Nov. 30, 2022
- First-round review decisions: Feb. 28, 2023
- Deadline for revision submissions: Apr. 30, 2023
- Notification of final decisions: Jun. 30, 2023
- Tentative publication: Jul. 30, 2023

Submission Information

Submissions to the special issue will be screened by the Special Issue Editors to ensure that they conform to the quality standards of ACM Transactions on Sensor Networks (TOSN). Papers that do not pass this initial screening will be immediately returned to the authors. Reviewers will apply those standards in forming recommendations for acceptance, revision, or rejection. Papers should be formatted with TOSN style (https://dl.acm.org/journal/tosn/author-guidelines). Prospective contributors should submit their papers directly to the online submission system (https://mc.manuscriptcentral.com/tosn). In addition, Authors please choose the Special Issue on Distributed and Collaborative Learning Empowered Edge Intelligence in Smart City in the online submission.

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