Special Session 5: AI-based Optimization and Management in Cloud-Edge IoT Networks

Chairs: Jianxiong Guo, Beijing Normal University, China

Brief Description of the Session

In the era of 5G/6G and the development of the Internet of Things (IoT), such as wearable devices, autonomous systems, and drones, there is a need to integrate artificial intelligence (AI) technologies into the design, planning, and optimization of future edge networks. Notably, the emerging framework of deep learning can be a crucial enabler for intelligent processing in a broad range of scenarios. Modern deep learning and reinforcement learning provide opportunities for network optimization, resource management, routing, transport protocol design, and mechanism design in Cloud-Edge Networks. For example, the massive amounts of data generated from multiple sources, ranging from network measurements to IoT sensors, drones, and surveillance images, can be used to show the comprehensive operational view of the massive number of devices within the network.

Topics

- Resource and network optimization using AI techniques.
- Distributed machine learning algorithms over realistic cloud-edge networks.
- AI for emerging communication systems and applications, such as drone systems, IoT, edge computing, caching, smart cities, and vehicular networks.
- AI techniques for information-centric networks and data mining.
- Performance analysis and evaluation of AI techniques in wired/wireless communication systems.
- Secure AI over IoT networks.

Brief Introducation of Chair and Co-chairs with Photo

Jianxiong Guo is an associate professor with the Advanced Institute of Natural Science, Beijing Normal University, and vice director of the Engineering Research Center of Cloud-Edge Intelligent Collaboration on Big Data, Ministry of Education. He received his Ph.D. from the Department of Computer Science, University of Texas at Dallas, in 2021, supervised by Dr. Ding-Zhu Du. He is mainly engaged in the research of combinatorial optimization, game and incentive mechanism design in social networks, Machine learning applications, the Internet of Things, and cloud-side systems, focusing on theoretical analysis and algorithm design. In recent years, he has published more than 100 academic papers in computer networks, data science, and theoretical computer science, among which more than 40 papers have been published in IEEE/ACM Transactions series as the first/corresponding author. He presided over or participated in several national projects, including NSFC and National Key R&D program of China, and served as a member of academic committees of many top international conferences and a reviewer of international journals.