Advanced Distributed Optimization for Edge-Intelligence Communication Systems

With the development of artificial intelligence and intelligent systems, multi-agent has been widely applied in practical edge-intelligence communication systems such as mobile edge computing networks, industrial Internet of Things (IoT), smart cities, smart home and smart grid networks. In these applications, multiple agents interact with each other by exchanging the training model or gradients, where a centralized node is often used to gather the status and reward of all the agents. This however brings a huge burden on the communication and a potential issue of information leakage and data island. To solve these issues, distributed optimization has been proposed to apply in the multi-agent learning, whereas federated learning is a typical form of distributed optimization to break dilemma of data island. There are still several fundamental challenges for the advanced distributed optimization in multi-agent learning for the edge-intelligence communication systems, from the aspects of convergence analysis, communication overhead and resource allocations, which have attracted much attention from both academy and industry.

This special issue collects the latest results emerging on the field of Cognitive Infocommunications.

Special Issue Editors:
Prof. Lisheng Fan
Guangzhou University
George K. Karagiannidis
Aristotle University of Thessaloniki
Venki Balasubramanian
Federation University

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