CALL FOR PAPERS

Future Generation Computer Systems

Special Issue on

Integration of Communication, Computing, Caching and Learning (3C-L) for 6G Wireless Systems

I. AIM AND SCOPE

As the explosive growth of smart connected devices and new services with rich experiences, such as truly immersive VR/AR/MR (XR), network traffic volume has been growing exponentially. The traditional network architecture cannot accommodate such user demands in terms of throughput, latency, massive connections, and so forth. Therefore, edge computing technologies are proposed to bring computation and caching resources at the edge of the 6G wireless systems. The combination of communication, computation and caching functionalities endows the next-generation of wireless systems with powerful data processing and caching capabilities, hence enriching the computing and storage experience of mobile user and enabling new applications to be implemented on the network. The allocation and management of communication, computing and caching resources needs to be jointly optimized for improving the quality of service and user experience. However, the high dynamics in terms of channel conditions, user mobility, and the available computation and caching capabilities make it quite challenging to jointly optimize communication, computing and caching resources while also dealing with time-varying network conditions. Artificial intelligence (AI) is an emerging paradigm in which entities and systems are able to learn and make decision by imitating biological processes. Modern machine learning is a key enabler to deal with the problems with uncertain, time-variant, and complex features of 6G, including channel modeling, network optimization, resource management, routing, protocol design, and application/user behavior analysis. However, the research on the integration of Communication, Computing, Caching and Learning (3C-L) still is in its infancy state with many key problems to be solved.

II. TOPICS

This special issue aims to provide a forum for researchers and practitioners from academia and industry to present their latest research findings on the 3C-L integration for 6G wireless systems. Potential topics include, but are not limited to the following:

- AI-based network design and resource allocation for efficient 6G wireless systems
- AI for the modeling and analysis of integrating communication, computation and caching in 6G wireless systems
- AI for computation offloading in 6G wireless systems
- AI for edge caching in 6G wireless systems
- Resource management and cross-layer design for AI-based 6G wireless systems
- AI-inspired secure and intelligent resource management in 6G wireless systems
- Efficient architecture and new protocol design for AI-based wireless systems
- Intelligent data processing, communications, and integration in edge intelligence for 6G wireless systems
- Efficient resource management for edge intelligence in 6G wireless systems
- Performance analysis and evaluation for intelligent 6G wireless systems
- Implementation/Testbed/Deployment for AI-based 6G wireless systems

III. IMPORTANT DATES

Paper submission deadline: 1 April 2022
First review round completed: 31 May 2022
Revised manuscripts due: 31 July 2022
Final notification: 30 September 2022

IV. SUBMISSION GUIDELINES

Authors need to follow the manuscript format and an allowable number of pages described at Future Generation Computer Systems Guide for Authors page.

V. GUEST EDITORS

- Celimuge Wu, The University of Electro-Communications, Japan
- Schahram Dustdar, Vienna University of Technology, Austria
- Yang Yang, ShanghaiTech University, China
- Kuan Zhang, University of Nebraska-Lincoln, USA
- Tingting Yang, Dongguan University of Technology, China
- Yueyue Dai, Nanyang Technological University, Singapore