CALL FOR PAPERS

IEEE Transactions on Emerging Topics in Computational Intelligence

Special Issue on Computational Intelligence to Edge AI for Ubiquitous IoT Systems

I. AIM AND SCOPE

The prosperity of 5G and IoT brings revolutionary changes to our daily lives and serve the computing tasks among ubiquitous devices, such as applications in intelligent transportation, mobile e-commerce, unmanned vehicle and healthcare. Enabling such smart life or smart cities has become a popular research topic with an urgent demand.

Artificial Intelligence (AI) has been witnessed as one of the fastest-growing technologies in our life to optimize the resources and make our daily life more convenient. The existing computational intelligence algorithms and systems cannot support such large amounts of data in a relatively short time. Facing with real-time requirements from users, edge computing which process data at the network edge is proposed to collaborate with the cloud to provide better performance. The trained model from the cloud can be sent to edge nodes for real-time data inference. However, the current computational intelligence methods are far away from taking full advantage of the edge-cloud AI architecture, especially on high-performance computing capacity of the edge. Firstly, new computational intelligence algorithms fit for Edge AI need to be developed. Instead of splitting previous algorithms into small components, new algorithms should leverage the awareness of local data and pay more attention to edge-edge intelligence collaboration and edge-cloud communication. Besides, the computation system should provide full support for Edge AI to stimulate the computation potential, including smart scheduling, security protection, context-aware, environment-aware ability and so on. Moreover, with Edge AI and new computational intelligence algorithms and systems, novel applications and services will be developed to start a new domain.

Thus, Computational Intelligence to Edge AI is supposed to be one of the most useful tools to the Ubiquitous IoT systems. This special issue aims to explore recent advances in Edge AI technologies in collaborative computing for Ubiquitous IoT systems.

II. TOPICS

The topics of interest for this special issue include, but are not limited to

- Computational intelligence algorithms for edge AI
- Computational intelligence system services in edge AI
- Operating system and framework for edge AI
- Multi-agent planning and coordination
- Computational intelligent based edge services
- Computational intelligence application design in edge AI
- Testbed and simulation tools for edge AI
- Intelligent computation allocation and offloading
- Green and sustainable resource management in edge AI
- Quality of Service(QoS) adaptive design and algorithms in edge AI
- Computational intelligence optimization in edge AI
- Collaborative computing in edge AI
- Performance evaluation, benchmarks for edge AI
- Security and privacy in edge AI
- Network optimization and communication protocol for edge AI

III. SUBMISSIONS

Manuscripts should be prepared according to the "Information for Authors" section of the journal and submissions should be done through the journal submission website: https://mc.manuscriptcentral.com/tetci-ieee, by selecting the Manuscript Type of "Computational Intelligence to Edge AI for Ubiquitous IoT Systems" and clearly marking "Computational Intelligence to Edge AI for Ubiquitous IoT Systems" as comments to the Editor-in-Chief. Submitted papers will be reviewed by at least three different reviewers. Submission of a manuscript implies that it is the authors' original unpublished work and is not being submitted for possible publication elsewhere.

IV. IMPORTANT DATES

Paper Submission Deadline: Nov. 20, 2021
First Round Review Notice: Feb. 20, 2022
Revision Due: Apr. 20, 2022
Final Notice of Acceptance/Reject: Jun. 20, 2022

V. GUEST EDITORS

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