

## **IEEE IoT Journal Special Issue on Cloud-Edge-Terminal Collaboration Enabled AIoT: Services, Technologies, and Applications**

Artificial Intelligence of Things (AIoT) is considered a collaborative application of Artificial Intelligence (AI) and the Internet of Things (IoT). AIoT systems realize real-time information acquisition through IoT sensors and perform intelligent data analysis tasks anywhere along the terminal-edge-cloud continuum to form a smart and enabling ecosystem. However, the subsequent development of AIoT faces a conundrum: how to sense the geographically diverse and widely varying environment, then acquire the massive and heterogeneous IoT data featuring a restrained value density accurately, and finally integrate the multi-source data intelligently to provide real-time, intelligent, and high-quality applications.

The integration of cloud computing and edge computing is an effective way to achieve high-level AIoT. Cloud computing addresses the problem of terminal devices having limited computing, communication, and storage capabilities effectively. However, the limited bandwidth and ultra-long communication link between terminal devices and the cloud cause severe system performance degradation, e.g., backbone network overload, intolerable service delay, and even privacy leakage vulnerabilities. Edge computing overcomes the structural flaws of the cloud computing hierarchy because edge servers are deployed generally at the very last mile to users and data sources. As a phenomenal distributed computing paradigm, however, edge computing systems only manage local information rather than global information, and the available resources of the edge are relatively limited compared with the cloud. Due to the soaring computing potential of AIoT terminals and the growingly rigorous government regulations on privacy protection of individual information, the collaborative cloud-edge-terminal architecture is considered to effectively promote the development and application of AIoT. Concretely, the cloud data centers execute in-depth global big data analytics, which accommodates delay-insensitive data processing scenarios, whereas the edge servers focus on local-area, small-scale, real-time, and on-demand tasks. The cloud-edge-terminal collaboration enables terminal devices to make full use of the computing resource of the edge servers and cloud centers, minimizing service latencies by parallel processing.

The related research on leveraging the cloud-edge-device collaboration to promote AIoT development should be further deepened. Towards that end, this special issue aims to provide a venue to exchange recent advances in this topic. In this special issue, we look for original and high-quality research works about “Cloud-Edge-Terminal Collaboration Enabled AIoT: Services, Technologies, and Applications”. Theoretical, experimental studies, and also case studies are highly encouraged. Relevant topics include, but are not limited to:

- Cloud-Edge-Terminal collaboration enabled AIoT computing system designs
- Cloud-Edge-Terminal collaboration enabled AIoT framework designs
- Cloud-Edge-Terminal collaboration enabled AIoT sensing technologies
- Cloud-Edge-Terminal collaboration enabled AIoT knowledge inference technologies
- Key technologies and core applications for AIoT
- Trusted, secure, and privacy computing system designs for AIoT
- Big data analytics for AIoT
- AIoT prototypes and case studies
- Cloud-Edge-Terminal collaboration enabled AIoT performance analyses
- Cloud-Edge-Terminal collaboration enabled AIoT resource management, scheduling, and computing offloading schemes

### **Important Dates:**

- Submission Deadline: May 15, 2023
- First Round Review Due: July 31, 2023
- Revision Due: September 15, 2023
- Sec. Reviews Due/Notification: October 15, 2023
- Final Manuscript Due: October 30, 2023
- Publication Date: 2023

### **Submission Guidelines:**

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, <http://mc.manuscriptcentral.com/iot>. When the authors reach the “Article Type” step in the submission process, they should select SI: Cloud-Edge-Terminal Collaboration Enables AIoT: Services, Technologies, and Applications. Solicited original submissions must not be currently under consideration for publication in other venues. Author guidelines and submission information can be found at <http://ieee-iotj.org/guidelines-for-authors/>.

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