IEEE COINS 2024

IEEE International Conference on Omni-layer Intelligent Systems

London, UK | July 2024

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Call for Papers

Track: Circuits and Systems (CAS) Designs for AIoT

The Internet of Things (IoT) and Big Data applications drive machine learning technology development. The devices for the Artificial Intelligence of Things (AIoT) applications provide sensing, actuation, processing, and communication at low-power levels and at low cost. Thereby, they must be resilient in the face of harsh environments, challenging communication requirements, and long lifetimes that may reach beyond the useful lives of the individual nodes. This track explores the design of circuits and systems for the future AIoT era.

Emerging AIoT devices and applications produce increasingly high volumes of data. At the same time, they require significant computational requirements that often do not fit in the stringent power envelopes of the existing AIoT devices. Through the hierarchical IoT structure, the data centers and cloud servers are usually used to empower the IoT systems by performing massive data processing on behalf of the IoT users. In this track, the emerging hierarchical AIoT structure and its cross-layer collaboration schemes to process the massive data will be investigated.

Artificial Neural Networks (ANN) and Spiking Neural Networks (SNN) have shown significant advantages in many domains. Current large-scale ANNs, however, involve complex communication, extensive computations, and large storage requirements, which are beyond the capability of current resource-constrained AIoT devices. SNNs, on the other hand, process data asynchronously and can lead to efficient signal-processing systems. However, learning in these systems has not shown the same level of success as ANNs and needs further investigation. We invite original research ideas and efforts toward efficient design of ANN and SNN circuits and systems for low-power and high-performance AIoT devices.

The track topics of interest include, but are not limited to:

- Sensory Circuits & Systems for AIoT
- Communications Circuits & Systems for AIoT
- Energy-aware Circuits and Systems for AIoT Applications
- Circuits and systems for Big Data Processing
- Artificial Intelligence Circuits and Systems
- Neural Networks & Neuromorphic Engineering
- Emerging Technologies in CAS (e.g., Beyond CMOS)
- Application and Architecture of Artificial Neural Networks