

# Call For Papers

## The 19th IEEE International Conference on Ubiquitous Intelligence and Computing

### Special Session: Special Session on Ubiquitous computing meets AI

Ubiquitous computing expects an intelligent world where the broad deployment of various smart devices can seamlessly communicate with each other, thus making the interaction between devices and people more enjoyable and convenient. One of the significant goals of ubiquitous computing is to enable devices to intelligently perceive changes in the surrounding environment, and provide a full range of personalized services based on user needs. In recent years, AI technology has given the devices powerful intelligence, and has a great potential to pave the last miles for ubiquitous computing by improving the interaction experience between people, devices and environments. At the same time, ubiquitous computing architecture provides AI with rich application scenarios, data, and computing resources, and promotes the development of AI to a great extent. The convergence of ubiquitous computing and AI brings researchers great opportunities, as well as challenges.

On one hand, ubiquitous computing promotes AI with rich computing resources and data. The ubiquitous devices offer a large amount of close-to-user computing resources. Studying Ubiquitous computing architectures to exploit the ubiquitous computing resources is central to ensure the real-time computing of AI models, such as model partitioning strategies, collaborative computing techniques, resource scheduling schemes and efficient AI accelerators. In addition, the ubiquitous sensors generate a large number data regarding the environments and user preferences. Utilizing these real-time and multi-modal data to improve the performance of AI model still remains a big challenge.

On the other hand, ubiquitous computing has an urgent need for advanced AI techniques, especially for smart interaction and environment perception, prediction ability, and personalized services. For example, in the meeting scenarios, the intelligent techniques in mobile phones can percept the environment then automatically switches to silent mode. In the automatic driving scenario, the car should use the AI technique to predict the best route for personality preference. AI techniques to provide more natural human-computer interaction, and make a variety of environmental perceptions and decisions are urgently needed in ubiquitous computing.

This is a special session of the 19th IEEE International Conference on Ubiquitous Intelligence and Computing (<http://www.ieee-smart-world.org/2022/uic/>). Please submit your paper via the submission site (<https://edas.info/N29956>) and select the special session of “Special Session2: Ubiquitous computing meets AI” marked with “UIC-AI”.

In this special issue, we solicit original work exclusively on ubiquitous computing and AI, specifically tackling the emerging topics of ubiquitous computing architectures for AI,

addressing specific challenges in the field. The list of possible topics includes, but not limited to:

- Multi-cloud and edge-cloud collaboration
- Cloud native operating systems such as Kubernetes, etc.
- Cloud native infrastructure
- Ubiquitous computing architectures for AI
- AI models for ubiquitous interactions
- Big Data in Ubiquitous Systems
- Power-aware efficient ML/AI algorithms for ubiquitous computing architectures
- Parallel & distributed neural networks for ubiquitous computing architectures
- Data or/and model parallelism on ubiquitous computing architectures
- Hardware-aware ML/AI algorithms on ubiquitous computing architectures
- Resource scheduling for large-scale intelligence applications of ubiquitous
- Embedded Chips, Sensors and Actuators for AI
- Intelligent Wearable Devices & Embodied Interaction
- Embedded AI Algorithms and Agents
- Interaction to Smart Objects and Devices
- Smart Healthcare and Active Assisted Living
- Sensor, Ad Hoc and P2P Networks for AI
- Wearable Personal and Body Area Systems
- Intelligent Services and Architectures
- Cognitive computing in ubiquitous systems
- computing architectures
- AI/ML algorithms for small-scale low-power computing system architectures
- AI/ML algorithms for embedded systems
- Computing system architecture design for distributed and cooperative learning
- Efficient Accelerators for AI

## **Session Chairs**

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## **Important Dates**

Paper Submission Due: Sep 01, 2022

Acceptance Notification Due: Oct 01, 2022

Final Manuscript Due: Oct 31, 2022