CALL FOR PAPERS

IEEE Internet of Things Journal

Special Issue on Effective, Efficient, and Trustworthy AI Agents for the Internet of Things

The Internet of Things (IoT) is evolving into a complex ecosystem of interconnected devices and sensors that generate vast streams of real-time data. To manage this complexity, AI agents are increasingly deployed for tasks such as perception, reasoning, and decision-making, enabling intelligent services in domains like smart healthcare, industrial automation, and urban infrastructure. These agents bring advantages in real-time processing, contextual awareness, and autonomous adaptability, but also face challenges related to effectiveness, efficiency, and trustworthiness—especially under resource constraints and in dynamic environments.

This special issue invites research on intelligent AI agents tailored for IoT systems. We welcome contributions focused on lightweight models, scalable learning frameworks, privacy-preserving mechanisms, and robust integration strategies. The goal is to advance the development of effective, efficient, and trustworthy AI agents that can unlock the full potential of IoT across diverse real-world applications.

Topics of interest include, but not limited to:

- Real-time analytics and autonomous decision-making in IoT using AI agents
- Memory-augmented and context-aware architectures for long-term learning
- Reinforcement learning for adaptive decision-making in dynamic environments
- Lightweight and low-latency perception models for AI agents in IoT
- Perceptual interaction for collaborative intelligence in AI agents
- Multimodal perception and sensor fusion for cognitive AI agents
- Robust Interaction of AI Agents for IoT
- Federated learning and differential privacy for AI agents for IoT
- Efficient architectures for AI agents in IoT applications
- Interpretable decision-making for AI agents for IoT
- Adversarial training and defense strategies for secure AI agents for IoT
- Dynamic cognitive architectures for AI agents for IoT
- Goal-directed planning and reasoning mechanisms for AI agents for IoT
- Internal mental state modeling (memory, emotions, rewards) in AI agents for IoT
- World model development for AI agents for IoT

Important Dates

- Submission Deadline: December 31st, 2025
- First Review Due: February 28th, 2026
- Revision Due: April 15th, 2026
- Second Reviews Due/Notification: June 15th, 2026
- Final Manuscript Due: June 30th, 2026
- Publication Date: September 2026

Submission

The original manuscripts to be submitted need to follow the guidelines at: https://ieee-iotj.org/wp-content/uploads/2025/02/IEEE-IoTJ-Author-Guidelines.pdf, which should not be concurrently submitted for publication in other venues. Authors should submit their manuscripts through the IEEE Author Portal at: https://ieee.atyponrex.com/journal/iot. The authors must select as "Special Issue on Effective, Efficient, and Trustworthy AI Agents for the Internet of Things " when they reach the "Article Type" step in the submission process.

Guest Editors

- Cen Chen (chencen@scut.edu.cn), South China University of Technology, China.
- Sin G. Teo (teosg@i2r.a-star.edu.sg), Institute for Infocomm Research, Agency for Science, Technology and Research, Singapore.
- Dima Rabadi (dqr5554@psu.edu), Pennsylvania State University, United States.
- Xulei Yang (yang_xulei@i2r.a-star.edu.sg), Institute for Infocomm Research, Agency for Science, Technology and Research, Singapore.