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IEEE Internet of Things Journal

Special Issue on Distributed Communication-Aware Agentic Artificial Intelligence for the Internet of Things

The rapid evolution of the Internet of Things (IoT) is driving the transition from connected sensing to autonomous, intelligent, and collaborative systems. As IoT deployments become increasingly large-scale, heterogeneous, and dynamic. Conventional AI approaches based on centralized processing or reactive decision-making are no longer sufficient. Agentic Artificial Intelligence (Agentic AI), with its capabilities for autonomous reasoning, planning, learning, and goal-driven decision-making, enables communication-aware coordination across IoT devices, edge, fog, and cloud platforms to jointly optimize communication, computation, learning, and resource management. This Special Issue aims to bring together researchers from AI, wireless communications, distributed systems, and IoT to present the latest advances in distributed communication-aware Agentic AI, including novel architectures, algorithms, communication frameworks, and real-world applications for next-generation autonomous IoT systems.

The areas of relevance include, but are not limited to:

- Distributed agentic AI testbeds, architectures and autonomous IoT system design
- Communication-aware distributed multi-agent coordination in IoT
- Goal-driven and self-adaptive distributed IoT management using agentic AI
- Distributed reasoning, planning, and decision-making across IoT environments
- Resource allocation and workload orchestration under communication constraints
- Edge, fog, and cloud intelligence using distributed agentic AI
- Scalability, latency, and energy-aware optimization in distributed IoT systems
- Trustworthy, explainable, and safe distributed agentic AI for IoT
- Security-, privacy-, and resilience-aware autonomous IoT systems
- Self-healing and fault-tolerant distributed IoT networks enabled by agentic AI
- Human-agent and human-in-the-loop distributed IoT intelligence
- Agentic AI for distributed digital twins and cyber-physical IoT systems
- Applications in smart cities/grids, intelligent transportation, industrial IoT, healthcare
- Complexity, scalability, and performance analysis of distributed agentic IoT systems
- Metrics for latency, reliability, autonomy, and energy efficiency in distributed IoT
- Agentic-AI-driven anomaly detection, fault diagnosis, and cybersecurity distributed IoT
- Integration of foundation models and LLM-based agents in distributed IoT environments

Important Dates

- Submission Deadline: **Feb 28, 2027**
- First Review Due: **30 April 2027**
- Revision Due: **15 June 2027**
- Second Reviews Due/Notification: **15 July 2027**
- Final Manuscript Due: **August 31, 2027**
- Publication Date: **October 2027**

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 Distributed Communication-Aware Agentic Artificial Intelligence for the Internet of Things " when they reach the "Article Type" step in the submission process.

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