

CALL FOR PAPERS

IEEE Internet of Things Journal

Special Issue on “Living Internet of Things: A Paradigm for Lifelong Learning, Continuous Intelligence, and Autonomous Evolution”

The Internet of Things (IoT) is rapidly evolving from interconnected sensing devices toward intelligent cyber-physical ecosystems capable of autonomous perception, communication, reasoning, and decision-making. While recent advances in artificial intelligence, edge computing, and distributed networking have significantly enhanced IoT capabilities, today's IoT systems largely remain static, relying on predefined models, periodic retraining, and centralized management. Such architectures are increasingly inadequate for supporting future IoT deployments operating in dynamic, large-scale, and continuously changing environments. The Living Internet of Things (LIoT) represents a transformative paradigm that redefines IoT systems as continuously evolving intelligent ecosystems. Inspired by the adaptive behavior of biological systems, Living IoT enables connected devices, networks, and services to continuously acquire knowledge, adapt to environmental changes, self-organize distributed resources, optimize system behavior, and autonomously evolve throughout their operational lifetime. Rather than treating intelligence as a fixed capability embedded during deployment, Living IoT promotes lifelong learning, continuous intelligence, adaptive networking, autonomous orchestration, and resilient system evolution as intrinsic properties of future IoT infrastructures. This Special Issue aims to establish the first comprehensive forum dedicated to the theoretical foundations, enabling technologies, system architectures, communication protocols, intelligent networking, distributed intelligence, and practical applications of the LIoT. It welcomes original research contributions that advance adaptive IoT architectures capable of continuous learning, intelligent resource orchestration, autonomous service provisioning, trustworthy system evolution, semantic interoperability, and sustainable operation across heterogeneous edge-cloud-IoT ecosystems. Unlike existing Special Issues that primarily focus on specific AI technologies, such as large language models, foundation models, agentic AI, or edge intelligence, this Special Issue introduces Living IoT as a new architectural paradigm centered on the continuous evolution of intelligent connected systems. It seeks interdisciplinary contributions spanning wireless communications, computer networking, distributed systems, embedded computing, cyber-physical systems, artificial intelligence, cybersecurity, and IoT applications. Researchers from academia, industry, and government laboratories are invited to submit original, unpublished, and high-quality research that contributes to the realization of adaptive, self-organizing, resilient, and continuously evolving IoT ecosystems.

Topics of interest include, but are not limited to:

- Architectures and theoretical foundations for the LIoT

- Lifelong learning and continuous intelligence for adaptive IoT systems
- Self-organizing and self-evolving IoT architectures
- Adaptive communication protocols and intelligent networking
- Autonomous resource orchestration across edge-cloud-IoT infrastructures
- Distributed intelligence and collaborative decision-making
- Knowledge-driven IoT systems and semantic interoperability
- Context-aware computing and intelligent service orchestration
- Intelligent lifecycle management and autonomous system optimization
- Trustworthy, secure, privacy-preserving, and resilient Living IoT systems
- Sustainable and energy-efficient intelligent IoT infrastructures
- Explainable and transparent intelligence for autonomous IoT operations
- Intelligent sensing and adaptive cyber-physical systems
- Real-world Living IoT testbeds and large-scale deployments
- Living IoT applications for smart cities, Industry 5.0, healthcare, transportation, agriculture, energy systems, environmental monitoring, and critical infrastructures

Important Dates

- Submission Deadline: April 15th, 2027
- First Review Due: June 15th, 2027
- Revision Due: July 15th, 2027
- Second Reviews Due/Notification: August 15th, 2027
- Final Manuscript Due: October 15th, 2027
- Publication Date: December 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 "Living Internet of Things: A Paradigm for Lifelong Learning, Continuous Intelligence, and Autonomous Evolution" when they reach the "Article Type" step in the submission process.

Guest Editors

- Hsin-Hung Cho, National Ilan University, Taiwan (hhcho@niu.edu.tw)
- Gwanggil Jeon, Incheon National University, Korea (gjeon@inu.ac.kr)
- Edith C. H. Ngai, The University of Hong Kong, Hong Kong (chngai@eee.hku.hk)
- Amrit Mukherjee, University of South Bohemia, Czechia. (amrit1460@ieee.org)
- Guangjie Han, Hohai University, China (hanguangjie@ieee.org)
- Abdellah Chehri, Royal Military College of Canada, Canada. (abdellah.chehri@rmc-cmr.ca)