Call for Papers
IEEE Internet of Things Journal
Special Issue on
Intent-based Networking for AI powered IoT Communications

In recent years, the demand for wireless communication has witnessed a tremendous growth which has shifted the focus of research fraternities towards big data analytics (BDA). This technological trend has put significant pressure on data center providers to create the next-generation wireless communication infrastructures, which can provide more flexible services regarding end-to-end latency and reliability. In this direction, Intent-based Networking (IBN) has been evolving as a promising solution where a specialized software seamlessly plans, designs and implements the changes in the network. Numerous high-computing networking paradigms like Software Defined Networks and Network Function Virtualization have already gained much attention in the recent years, but their device-to-device management strategy often falls short while dealing with the advanced wireless communication technologies like 5G. Further, investigating new software interfaces between ML and the IoT is crucial for enhancing the functionality and efficiency of interconnected devices. The investigation of these interfaces not only enhances the operational efficiency of IoT devices but will also contributes to creating more intelligent, interconnected, and energy-efficient ecosystems. Thus, the objective of this special issue focuses on exploring the recent advances in wireless communication networks while addressing the practical challenges and limitations associated with current state-of-the-art architectures. This special issue aims to bring together leading researchers and developers to present their experimental, conceptual, and theoretical contributions for amalgamating IBN for AI powered IoT communications. Particular emphasis is placed on novel solutions which are not just the evolution of 5G but also act as key drivers for the next generation communication networks.

Suitable topics include, but are not limited to following areas:

- New framework, algorithms, and protocol designs for IBN-based big data communications
- Security, privacy and fault detection
- Emerging technologies on AI and Machine Learning (ML) for future IoT communications
- IBN in mobile data offloading
- IBN in emerging networks like flying ad-hoc networks, vehicular networks, smart grids, etc.
- Emerging IoT and cloud applications
- Mission-critical applications like smart grid, industry automation, health-care, etc.
- IBN inspired MAC and routing protocols
- Big data analytics frameworks
- Deep learning and federated learning for network control and communications
- AI and ML algorithms for network management
- Software interfaces for integrating AI/ML with IoT
- Protocol design and optimization
- Energy-efficient solutions and their integration to network architectures
- Results from experiments, testbeds, and simulations
- Other concepts and technologies

Important Dates

Submission Deadline: September 15, 2025
First Review Due: October 15, 2025
Revision Due: November 15, 2025
Sec. Reviews Due/Notification: December 15, 2025
Final Manuscript Due: January 15, 2026
Publication Date: March 2026

Submission Guidelines

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through **IEEE INTERNET OF THINGS JOURNAL AUTHOR PORTAL SUBMISSION SITE**. When the authors reach the "Article Type" step in the submission process, they should select **"Special Issue on Intent-based Networking for AI powered IoT Communications"**. Solicited original submissions must not be currently under consideration for publication in other venues. Author guidelines and submission information can be found at **https://ieee-iotj.org/guidelines-for-authors/**.

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