

# IEEE Internet of Things Journal Special Issue on AI-Enabled Cognitive Communications and Networking for IoT

The Internet of Things (IoT) allows physical objects to be sensed and controlled via existing network infrastructure, enabling integration between the computer system and the physical world, and leading to improved efficiency, reliability, security, and economical benefits. IoT has a wide variety of applications, ranging from smart cities, to autonomous driving and Industry 4.0.

As we enter the Internet of Things (IoT) era in which the communication network is becoming increasingly dynamic, heterogeneous, and complex, it is desirable to have cognitive communication systems and networks that possess multiple interacting capabilities for situation assessment, resource management, online/distributed learning, big-data processing, and intelligent decision making. AI techniques such as deep learning, probabilistic graph model, and reinforcement learning, aided with big data and IoT, provide a wide variety of tools and solutions to many new problems encountered in the design, operation and optimization of cognitive communication systems and networking, including resource management, situation assessment, channel identification, anomaly detection, root cause analysis, online/distributed learning. In addition to traditional communication networks, the development in IoT and software defined network (SDN) technologies have opened up new playgrounds for AI and machine learning. Towards this end, many research efforts have been recently undertaken to apply AI to cognitive communication and networking. This special issue aims to bring together researchers and engineers in the fields of IoT, communications & networking, AI, machine learning, and big data to address the emerging challenges in general area of AI enabled cognitive communication and networking for IoT. The topics include, but are not limited to

- Design of cognitive communication system by AI
- Performance monitoring in mobile networks
- IoT network design & optimization
- Resource management over networks
- SDN design & optimization by machine learning
- Graph computing for communication networks
- Mobile application behaviors & recommendation
- Signal processing over networks and graphs
- Stochastic optimization & online learning
- Machine learning-enabled security methods for IoT
- Sequential analysis and reinforcement learning for IoT
- Deep learning applications for IoT
- Big data system management in IoT
- Machine learning and big data for 5G
- Machine learning aided channel identification and estimation
- Distributed learning in multi-agent systems
- Multimodal data analysis & information fusion in IoT
- Anomaly detection & root cause analysis for network data

## Important Dates

Submissions Deadline: **May 1, 2018**

First Reviews Due: July 15, 2018

Revision Due: August 15, 2018

Second Reviews Due/Notification: September 15, 2018

Final Manuscript Due: October 15, 2018

Publication Date: 2018

## Submission

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, <http://mc.manuscriptcentral.com/iot>. Author guidelines and submission information can be found at <http://iot.ieee.org/journal>. The IEEE IoT Journal encourages authors to suggest potential reviewers as part of the submission process, which might help to expedite the review of the manuscript. Please suggest only those without conflict of interest. Each submission must be classified by appropriate keywords.

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