SCOPE

The emerging Internet of Things (IoT) paradigm aims to bring people, data, processes, and things together to fulfill the needs of our everyday lives. The market place for IoT is expected to grow rapidly due to significant increase in the number of smart devices, M2M connections, and smart wearables, and it has a wide range of application areas including eHealthcare, smart grids, smart home, smart cities, connected car and industrial automation. It is expected that the upcoming 5G technologies will be the backbone of IoT and will support IoT systems by expanding the coverage, by reducing the closed-loop latency and by enhancing the data rate. However, there are several challenges to be addressed to provide reliable and secure connections to the massive number of resource-constrained IoT devices.

Due to several unique features and diverse requirements of IoT systems such as low latency, low cost, low energy consumption, high failure rate and data transiency, the conventional communication protocols may not be suitable for these systems. In this regard, it is crucial to design resource-efficient, reliable and secure wireless communication technologies by considering various constraints imposed by heterogeneous IoT systems. Moreover, how to handle the massive unstructured/semi-structured data generated by resource-constrained devices through the resource-limited infrastructure is another important issue to be addressed. In this context, the recent trend is to utilize the emerging cloud computing platform to support IoT systems due to its enormous storage and processing capabilities. However, this convergence of IoT and cloud computing requires the need of designing efficient wireless communication technologies, and various aspects such as latency, energy efficiency, computational efficiency, system reliability and security need to be investigated.

TOPICS

This special session focuses on recent research activities in the areas of resource-efficient, reliable, and secure wireless communication technologies for IoT systems, low-complexity data acquisition and processing techniques, and cloud-assisted solutions for efficient management of heterogeneous IoT networks. In this direction, we invite researchers from academia, industries and governmental organizations to submit their novel works on system architectures, theoretical models, system-level simulations/experimental results, and hardware demonstration results in the related areas. The main topics of interest include, but are not limited to the following:

- Adaptive waveforms, RF energy harvesting, and adaptive modulation and coding techniques for low-power IoT systems
- Architectures/topologies for hierarchical IoT-cloud networks
- Cloud-assisted solutions for resource management in IoT systems
- Communication challenges and solutions for the applications of IoT in WBANs, WSNs, M2M, D2D, V2V, SatCom, and cellular systems
- Data aggregation, prioritization, and offloading techniques
- Energy-efficient data acquisition, reporting, and fusion techniques
- Hardware prototype design for IoT applications
- IoT Protocols and standards (IPv6, 6LoWPAN, RPL, 6TiSCH, oneM2M, BLE, EPCglobal, Z-Wave, LTE-M, and NB-IoT)
- Multi-hop and cooperative communications for IoT systems
- Orthogonal/non-orthogonal multiple access and access control schemes for IoT systems
- PHY/MAC layer algorithms for supporting IoT devices in 5G systems such as massive MIMO, small cells, full duplex, and mmWave systems
- Resource allocation, spectrum sharing, and interference mitigation
- SDN and virtualization techniques for IoT networks
- Security enhancement and privacy preservation techniques

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IMPORTANT DATES

Review paper submission: 04 August 2017
Notification of acceptance: 18 August 2017
Camera-ready submission: 25 August 2017

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