International Journal of Distributed Sensor Networks

Hindawi

Special Issue on

Challenges of Wireless Sensor Networks for IoT Applications

CALL FOR PAPERS

As communication, computing, and microelectromechanical technologies evolve, the concept of the Internet of Things (IoT) attracts more and more attention in both academia and industry. Consequently, there have been various proposals for IoT applications to support smart life, smart homes, smart workplaces, smart cities, and intelligent industrial automation. Since things become proactive actors of the Internet by generating and consuming information for IoT applications, one of the most important ingredients for IoT paradigm is a wireless sensor network (WSN).

Several standard bodies have developed protocols to provide connectivity between physical sensing systems and the Internet. For example, the CoRE working group (WG), the 6LoWPAN WG, and ROLL WG in IETF have developed protocols to enable web-like interaction, and the Internet integration in a low power lossy networks. Moreover, it is possible to link data produced by sensor nodes with web services based on SOAP and REST, SMS, or social networks.

Besides providing IP connectivity to sensor nodes, IoT applications impose several technical challenges on a WSN design: they include the data rate and connection range, low power operation and maintenance, security and privacy, reliability and timeliness, and efficient data aggregation and processing. In addition, as we move toward IoT era, it is a challenge to integrate WSNs in legacy environments with legacy technologies with other IoT elements. Even though there have been several pioneering works taking not only an evolutionary approach but also a revolutionary approach to design a WSN for IoT applications, much effort is still required to crystallize the concept of IoT into ubiquitous services.

This special issue is intended to attract contributions from academia and industry on the recent advances in different aspects of WSN design for IoT applications. Particularly, we solicit original research articles that solve problems, provide functionality, optimize tasks, and stimulate the continuing efforts to new activities in designing WSNs for IoT applications.

Potential topics include, but are not limited to:

- WSN architectures for Internet of Things
- Integration of WSNs and Internet of Things
- Perceived quality of information (reliability, timeliness)
- Scalability and sustainability issues
- Efficient data delivery, aggregation, and processing
- Autonomous control and management
- Data analysis and mining
- Transition mechanisms
- Energy saving and harvesting
- Theoretical approaches
- Cross-layer design for Internet of Things
- Security, privacy, and system integrity for Internet of Things
- Operational and management issues
- Experience and case studies
- Standardization effort
- Big data problems

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Manuscript Due
Friday, 1 January 2016

First Round of Reviews
Friday, 25 March 2016

Publication Date
Friday, 20 May 2016