Wireless Communications and Mobile Computing

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Special Issue on
Green Internet of Things (IoT): Enabling Technologies, Architectures, Performance, and Design Issues

CALL FOR PAPERS

Internet-of-Things (IoT) systems are envisioned to revolutionize the telecommunication paradigm by allowing direct integration between the physical world and machine-based systems. IoT systems allow everything to be connected, remotely accessed, and sensed and collaboratively communicate over the Internet. All IoT devices are supposed to be equipped with additional sensory and communication add-ons and in turn consume extra energy to sense the world and communicate with each other. Also, driven by the adoption from various organizations, the energy demand for IoT communication is expected to increase further. Subsequently, considering the energy efficiency for the design and development of IoT is crucial and will potentially lead to a more sustainable society through reduction of greenhouse emissions. In this context, it is crucial to investigate the challenges such as energy efficient architecture and resource management solutions for green IoT, realistic energy consumption models for different parts of IoT systems (e.g., wireless sensor network, core network, and embedded system), energy efficient cloud management, integration of renewable energy sources, smart grids, and wireless powered networks. That is, green design, green production, green utilization, and finally green disposal/recycling have a minimal impact on the environment.

Wireless connectivity is an essential ingredient for IoT and 5G is a potential enabling technology bringing about spectral/energy efficient, lower-cost connectivity to the IoT. For instance, narrowband IoT (NB-IoT) is part of LTE Advanced Pro innovations, defined in 3GPP Release 13 and beyond. NB-IoT enables multiyear battery life, provides deeper coverage to devices in challenging locations, and leverages already ubiquitous LTE networks. When 5G becomes commercially available, IoT connectivity will be further enhanced and will enable new capabilities, such as grant-free asynchronous transmissions and multihop mesh to inexpensively extend network coverage.

The purpose of this special issue is to present the most recent results on green IoT systems considering aspects related to the modeling, design, analysis, deployment, and management of green IoT networks. The special issue will also accept papers discussing the role of various 5G enabling technologies (such as full-duplex, nonorthogonal multiple access (NOMA)) in the reduction of energy consumption of future IoT systems. High quality research papers and comprehensive review articles are welcomed. We seek original contributions from both academia and industry that are unpublished and not under review by other journals/conferences.

Potential topics include but are not limited to the following:

- Energy-aware architecture and protocols for IoT assisted smart grid systems
- Energy efficient IoT for smart cities and smart buildings
- Green wireless sensor networks (WSNs)
- Energy efficient MAC and PHY mechanisms for IoT and low power WSNs
- Green cloud computing
- Green machine-to-machine (M2M) communication
- Self-sustainability of green IoT
- Smart metering infrastructures
- Ambient energy (RF, vibrations, and body motions) harvesting for IoT
- Spectrum management and sharing for green IoT
- Backhauling solutions and resource management for green IoT
- Beamforming schemes using power control for green IoT
- Green IoT applications in batteryless backscatter system

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/wcmc/gitp/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor
Hina Tabassum, University of Manitoba, Winnipeg, Canada
hina.tabassum@umanitoba.ca

Guest Editors
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mahdi.benghorbel@ubc.ca

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hesham.elsawy@kaust.edu.sa

Wael Guibene, Intel Corporation, Santa Clara, USA
wael.guibene@intel.com

Sudarshan Guruacharya, University of Manitoba, Winnipeg, Canada
sudarshan.guruacharya@umanitoba.ca

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