



Mobile Information Systems

Special Issue on
Green Internet of Things

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Internet of Things (IoT) connects physical objects such as thermostats, refrigerators, and vehicles to the Internet over the wireless medium and enables them to share information and coordinate operations. With applications in many domains that include transportation, healthcare, manufacturing, home automation, and power grid, IoT plays a remarkable role in improving the quality of life and growing the world's economy. Green IoT consists of two aspects. The first one refers to designing energy efficient computing devices, communications protocols, and networking architectures for interconnecting the physical world. The second aspect is to leverage IoT technologies to cut carbon emissions and pollutions and enhance the energy efficiency. Enabling green IoT involves various technologies such as RFID, sensor networks, cellular networks, machine-to-machine communications, energy harvesting devices and communications, cognitive radio, cloud computing, and big data analysis. With the advances of these enabling technologies, green IoT poses a great potential to bolster economic and environmental sustainability.

Although tremendous efforts have been made in advancing IoT technologies, green IoT still faces significant challenges from many aspects. It requires a major technological breakthrough to efficiently connect millions of devices to Internet with limited radio spectrum, to intelligently coordinate physical devices toward a complicate task, to effectively integrate big data analysis and cloud computing for smart operations, and to flexibly implement and validate technological innovations in existing systems. The purpose of this special issue is to publish original efforts describing theoretical and practical research endeavors addressing recent developments in green IoT. We also encourage visionary and experimental descriptions of future green IoT technologies and systems.

Potential topics include, but are not limited to:

- ▶ Energy efficient communication protocols including MAC protocol and TCP/IP
- ▶ Green IoT network architecture
- ▶ Performance analysis for energy efficient IoT communications
- ▶ Energy performance measurement and evaluation of IoT communications
- ▶ QoS/QoE aware resource allocation for green IoT
- ▶ Wireless energy transfer for energy efficient IoT
- ▶ Energy harvesting, storage, and recycling
- ▶ Cognitive radio and dynamic spectrum access for green IoT
- ▶ Green and ubiquitous computing in IoT
- ▶ Energy harvesting IoT devices, protocols, and networks
- ▶ Green IoT implementation and testbed
- ▶ Cross-layer energy efficiency optimization for IoT
- ▶ Energy efficient localization technologies in IoT
- ▶ Big data analysis for energy efficient IoT
- ▶ Integrate cloud computing with IoT systems
- ▶ Software defined networking and network function virtualization for green IoT
- ▶ Renewable energy powered fog computing
- ▶ IoT technologies for smart manufacturing and Industry 4.0
- ▶ IoT technologies for smart city and smart transportation
- ▶ IoT technologies for enhancing energy efficiency in smart grid

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