

Call for Papers

A Special Issue of Wiley International Journal of Communication Systems
on

Energy-Efficient Network Protocols and Algorithms for Wireless Sensor Networks

Wireless sensor networking is an emerging technology that promises a wide range of potential applications in both civilian and military areas, and has therefore received tremendous attention from both academia and industry in recent years. A wireless sensor network (WSN) consists of a large number of inexpensive and small nodes with sensing, data processing, and communication capabilities, which are densely deployed in a region of interest and collaborate to accomplish a common task, such as environmental monitoring, military surveillance, and industry process control. Distinguished from traditional wireless networks and ad hoc networks, WSNs are characterized of dense node deployment, unreliable sensor node, frequent topology change, and severe power, computation, and memory constraints. These unique characteristics and constraints present many new challenges to practical realization of WSNs, such as energy conservation, self-organization, fault tolerance, etc. In particular, sensor nodes are usually battery-powered and should operate without attendance for a relatively long period of time. In most cases, it is very difficult and even impossible to change or recharge batteries for these sensor nodes. For this reason, energy efficiency is of primary importance for the operational lifetime of a sensor network. To prolong the lifetime of a sensor network, energy efficiency must be considered in almost every aspect of sensor network design, not only at the physical layer but also at the link layer and the network layer. From the networking perspective, energy efficiency must be considered in the design of various network protocols and algorithms, including those for topology discovery, self-organization, medium access control, routing, data aggregation, fault-tolerance, etc. An energy-efficient network protocol or algorithm can provide significant power savings in individual sensor nodes and thus prolong the lifetime of the entire network. However, most existing network protocols and algorithms for traditional wireless ad hoc networks cannot effectively address the power constraint and other constraints of sensor networks. To realize the vision of sensor networks, it is imperative to develop various energy-efficient network protocols and algorithms in order to efficiently use the limited power in each sensor node and prolong the lifetime of the network.

The aim of this special issue is to present a collection of high-quality research papers that focus on energy-efficient network protocols and algorithms for WSNs. We are soliciting original contributions that were previously unpublished and are currently not under consideration by any other journal. As applicable to this theme, topics of interests include but are not limited to:

- Topology discovery and self-organization
- Medium access control (MAC)
- Routing and data dissemination
- Multicasting, geocasting, and broadcasting
- Quality of service routing

- Energy and resource management
- Query processing and data aggregation
- Localization and time synchronization
- Fault-tolerance and self-healing
- Performance modeling and analysis

Prospective authors should prepare their manuscript in accordance with the publication format described in the [Instructions to Authors](http://www3.interscience.wiley.com/cgi-bin/jabout/5996/ForAuthors.html) (<http://www3.interscience.wiley.com/cgi-bin/jabout/5996/ForAuthors.html>). There will be only one round of technical reviews and acceptance will be limited to papers requiring only minor to moderate revisions. Authors should submit a PDF version of their complete manuscripts (which should be compressed if the file size exceeds 1 MB) to jzheng@ieee.org according to the following timetable:

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