International Journal of Distributed Sensor Networks

Special Issue on

Hybrid Wireless Sensor Networks: Theory and Design

CALL FOR PAPERS

Hybrid wireless sensor networks consist of wireless networks (such as cellular network) and wireless sensor networks and such network is important to overcome the limitations of conventional sensor network where transmission range and data rate are quite limited. The focus of this special issue is on the hybrid wireless sensor network formed by wireless sensor nodes and base stations (cellular networks). Wireless sensor network without support from the fixed infrastructure is known as ad hoc sensor networks. Due to the lack of infrastructure, the data is forwarded to the destination via a multihop fashion. In other scenarios, a set of base stations are connected by wired links and placed within the ad hoc sensor networks to form a wired infrastructure, aiming to enhance the whole network performance. This resulting network is referred to as a hybrid wireless sensor network. A typical application scenario includes large area monitoring where traditional wireless sensor network is too limited, for example, highway traffic surveillance and real-time online inquiry across Texas.

In hybrid wireless sensor networks, the nodes exchange information over a common wireless channel. Under different traffic scenarios and different constraints, e.g., bandwidth and power, the amount of data exchanged among these nodes may vary. Under such challenges, new theory and design should be studied for hybrid wireless sensor networks with different network setup and different channel conditions.

The goal of the special issue is to publish the most recent results in the theory and design of hybrid wireless sensor networks. Researchers and practitioners working in this area are expected to take this opportunity to discuss and express their views on the current trends, challenges, and state-of-the-art solutions addressing various issues in the theory and design of hybrid wireless and sensor networks. Original and review papers on this topic are welcome.

Potential topics include, but are not limited to:

- Capacity in hybrid wireless sensor networks
- Network information theory for hybrid wireless sensor networks
- Multiple access techniques in hybrid wireless sensor networks
- Power and bandwidth allocation in hybrid wireless sensor networks
- Routing in hybrid wireless sensor networks
- MAC design in hybrid wireless sensor networks
- Radio propagation aspects in hybrid wireless sensor networks
- Antenna design for hybrid wireless sensor networks
- Crosslayer design in hybrid wireless sensor networks

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