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Ad-Hoc and Sensor Networking Symposium

IEEE GLOBECOM 2012

Scope and Motivation:

The field of ad-hoc, sensor and mesh networking is re-emerging amid unprecedented growth in the scale and diversity of computer networking. In recent years, ad hoc and sensor networks have enjoyed a tremendous rise in popularity. The continued miniaturization of mobile computing devices and the extraordinary rise of processing power available in mobile laptop computers combine to put more and better computer-based applications into the hands of a growing segment of the population.

A Mobile ad-hoc network (MANET) is a system of wireless mobile nodes dynamically self-organizing in arbitrary and temporary network topologies. People and vehicles can thus be internetworked in areas without a pre-existing communication infrastructure, or when the use of such infrastructure requires wireless extension. Therefore, such networks are designed to operate in widely varying environments, from military networks (with hundreds of nodes) to low-power sensor networks and other embedded systems. Dynamic topologies, bandwidth constraints, energy-constrained operations, wireless vulnerabilities, and limited physical security are among the characteristics that differentiate mobile ad hoc networks from fixed multi-hop networks.

There is a growing number of real applications using wireless ad hoc and sensor networks, and they are being taken seriously by the industries. These applications include, among others, emergency preparedness and response operations, decision making in the battlefield and data acquisition operations. Sensor networks have already entered many aspects of our lives. Wireless sensors can be deployed in almost any hostile and harsh weather environments. As a result, the last few years have witnessed a wealth of research ideas on ad hoc and sensor networks that are moving rapidly into commercialization and standardization.

As wireless nodes proliferate and as applications using Internet become familiar to a wider class of customers, those customers will expect to use networking applications even in situations where the Internet itself is not available. For example, people using laptop computers at a conference in a hotel might wish to communicate in a variety of ways, without the mediation of routing across the global Internet. Yet today such obvious communications requirements cannot be easily met using the Internet. Providing solutions to meet such requirements will be the subject of this symposium. The basic solution to meet such requirements is to allow mobile computer users with (compatible) wireless communication devices to set up a (possibly) short-

lived network just for the communication needs of the moment- in other words, an ad-hoc network. The ultimate goal is to enable a multitude of users at any place access information from anywhere at any time.

Before wireless and mobile ad hoc and sensor networking technology can be easily deployed, improvements must be made in such areas as: wireless technologies, variable topology, device heterogeneity, limited power supply and the lack of effective energy-efficient design, lack of QoS and application support, location and configuration management, addressing and routing, interoperability, and security.

This symposium aims at providing a forum for sharing ideas among researchers and practitioners working on state-of-the-art solutions to the challenges above. We are seeking papers that describe original and unpublished contributions addressing various aspects of ad hoc and sensor networks.

Topics of Interest

The Ad Hoc and Sensor Networking Symposium seeks original contributions in, but not limited to, the following topical areas:

- Applications and Evolutions of Ad Hoc, Sensor, and Mesh Networks
- Autonomic Networking
- Wireless, Ad Hoc, and Sensor Devices
- Physical Layer Design of Ad Hoc, Sensor, and Mesh Networks
- Mobile Social Networks
- Frequency and Channel Allocation Algorithms
- Topology Control and Management
- Algorithms and Modeling for Localization, Target Tracking, and Mobility Management
- Architectures of Wireless Communication and Mobile Computing
- MAC Protocols for Ad Hoc, Sensor, and Mesh Networks
- QoS Provisioning in Medium Access Control and Routing for Ad Hoc and Mesh Networks
- Analytical, Mobility, and Validation Models for Ad Hoc, Sensor, and Mesh Networks
- Performance Evaluation and Modelling of Mobile, Ad Hoc, Sensor, and Mesh Networks
- Integrated Simulation and Measurement based Evaluation of Ad Hoc and Sensor Systems
- New Simulation Languages, Methodologies, and Tools for Wireless Systems
- Analysis of Correctness and Efficiency of Protocols
- Data Management, Data Aggregation, Data Dissemination, and Query Processing
- Cryptography and Security Issues in Ad Hoc, Sensor and Mesh Networks
- Distributed Algorithms
- Pricing Modelling and Solutions
- Pervasive and Wearable Computing
- Co-existence Issues of Hybrid Networks
- Energy Saving and Power Control Protocols for Ad Hoc, Sensor, and Mesh Networks
- Resource Management Algorithms in Mobile, wireless Ad Hoc and Mesh Networks
- Synchronization and Scheduling Issues in Mobile and Ad Hoc Networks
- Service Discovery for Wireless Ad Hoc, Mesh, and Sensor Networks

- Cross-layer Design and Interactions
- Mobile Service and QoS Management for Ad Hoc and Sensor Networks
- Survivability and Reliability Evaluation and Modeling for Ad Hoc, Sensor, and Mesh Networks
- Ubiquitous and Mobile Access for Wireless Mesh Networks
- Security and Privacy Issues for Wireless Ad Hoc, Mesh, and Sensor Networks
- Vehicular to vehicle and vehicle to infrastructure communication
- Real-world test-beds, Field operational testing (FOT) and Simulation and emulation platforms

Symposium Co-Chairs:

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