

# Recent Advances in Wireless Communications and Networking

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The annual International Conference on Communications and Networking in China (CHINACOM) aims to provide a forum that brings together Chinese and international researchers and practitioners to showcase recent advances in communications networking research. CHINACOM 2008 is the third edition of this event, which was successfully held in Hangzhou, China, in August 2008. This special issue includes a collection of six outstanding research papers selected from CHINACOM 2008, which is a result of several stages of filtration and selection. First, out of the 822 submissions from 36 countries/regions in 5 continents, among which over 500 submissions were from

mainland China, less than 270 papers, including some invited papers, were accepted for presentation, representing an acceptance rate of about 33%. Among the 270 papers, 15 papers have been invited to extend and enhance their work for further consideration for publication in this special issue and six of them have finally been included in the special issue. We would like to use this opportunity to appreciate all the reviewers who volunteered their time and professional expertise to help us reach the selection decisions.

The papers included in this special issue cover a diversity of topics in wireless communications and networking. In the first paper, “BTAC: A Busy Tone Based Cooperative MAC Protocol for Wireless Local Area Networks”, Sayed et al. proposed and analyzed a busy tone based cooperative medium access control (MAC) protocol, called BTAC, for multi-rate wireless local area networks (WLANs) based on the concept of cooperative communications. The analytical and simulation results show that the BTAC protocol is simple, robust, and fully compatible with the IEEE 802.11b standard, and can achieve better throughput and delay performance than the standard distributed coordination function (DCF) protocol and the recently proposed CoopMAC protocol.

In the second paper, “Achieving End-to-end Fairness in 802.11e Based Wireless Multi-Hop Mesh Networks without Coordination,” Li et al. studied the fairness issue in using 802.11 at the MAC layer and proposed the use of 802.11e’s TXOP mechanism to restore/perform fair resource allocation. The proposed TXOP based mechanism is implementable on standard hardware in a simple and fully decentralized way without a need for message passing.

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In the third paper, “On the Deployment of Antenna Elements in Generalized Multi-User Distributed Antenna Systems,” Feng et al. studied the impact of the deployment of antenna elements on the performance of a multi-user distributed antenna system (DAS). They proposed a generalized system model, where the antenna elements are divided into antenna clusters and the antenna clusters are randomly deployed in the coverage area, and particularly investigated the impact of the antenna cluster size on the system performance in terms of the uplink sum rate capacity.

The fourth paper, “The Maximum Throughput of a Wireless Multi-Hop Path,” by Mao analytically investigates the maximum end-to-end throughput that can be achieved on a wireless multi-hop path and shows that the maximum achievable end-to-end throughput is determined by the throughput of its bottleneck. Moreover, it suggests an optimum scheduling algorithm, which can be used to achieve the maximum end-to-end throughput, and the use of the (maximal) independent sets as the basic blocks for the design of scheduling algorithms. The findings lay guidelines for the design of optimum scheduling algorithms for a wireless multi-hop network.

In the fifth paper, “Energy-efficient Tree-based Message Ferrying Routing Schemes for Wireless Sensor Networks,” Zhu et al. studied and proposed a tree-based message ferrying (MF) algorithm (TMFA) with least-ratio tree (LRT) construction to reduce energy consumption in a wireless sensor network. The experimental results show that as compared to existing least-energy tree (LET) construction and minimum spanning tree (MST) construction, LRT construction can achieve a better performance in terms of the ratio of the number of packets reaching the sink to the total energy consumed by all the nodes.

In the last paper, “On Object Identification Reliability Using RFID,” Wang et al. discussed object identification reliability and proposed a general framework for guaranteeing object identification reliability in RFID systems.

We would like to thank all the authors for their contributions to this special issue. We are grateful to all reviewers for their time and efforts in carefully reviewing all the papers and providing valuable review comments. We would also like to thank Katiucia Buonaiuto and Sara Fruner, the Assistant to the Editor-In-Chief, Monaliza Castañeda, the Springer Production Editor, Paulo Francisco Montes, the Springer JEO Assistant, and all other production staff for their support during the publication process.

It is our hope that the papers included in this special issue present recent research advances in wireless communications and networking, and become an important reference for researchers and practitioners in the area. Finally, we hope that the readers will find this special issue timely and informative.



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