

BIOGRAPHICAL SKETCH

Born in Harbin, China

B.S. 2005, Heilongjiang University, Harbin, China

M.S. 2008, Florida Atlantic University, Boca Raton, Florida

QUALIFYING EXAMINATION & PUBLICATIONS

Time in Preparation: 2008-2011

Qualifying Examination Passed: Spring 2009

Selected Publications:

D. Wang, X. Wang, and X. Cai, "Optimal Power Control for Multi-User Relay Networks Over Fading Channels," IEEE Transaction on Wireless Communications, vol. 10, no. 1, pp. 199--207, Jan. 2011.

X. Wang, D. Wang, H. Zhuang, and S. Morgera, "Fair Energy-Efficient Resource Allocation in Wireless Sensor Networks over Fading TDMA Channels," IEEE Journal on Selected Areas in Communications, vol. 28, no. 7, Sept. 2010.

X. Wang, I. Li, D. Wang, H. Zhuang, and S. Morgera, "Incorporating Retransmission in Quality-of-Service Guaranteed Multi-User Scheduling over Wireless Links," IEEE Transactions on Vehicular Technology, vol. 58, no. 8, pp. 4388-4397, Oct. 2009.

X. Wang, D. Wang, H. Zhuang, and S. Morgera, "Fair Energy-Efficient Resource Allocation over Fading TDMA Channels," Proc. of Globecom Conf., Honolulu, HI, Nov. 30-Dec. 4, 2009.

X. Wang, D. Wang, I. Li, H. Zhuang, and S. Morgera, "Incorporating Retransmission Diversity in Quality-of-Service Guaranteed Multi-User Scheduling," Proc. of 42nd Conf. on Info. Sciences and Systems, Princeton University, NJ, March 19-21, 2008.



COLLEGE OF ENGINEERING
& COMPUTER SCIENCE

Florida Atlantic University

THE FLORIDA ATLANTIC UNIVERSITY

COLLEGE OF ENGINEERING & COMPUTER SCIENCE

announces the

Ph.D. Dissertation Defense

of

DI WANG

for the degree of

DOCTOR OF PHILOSOPHY (PH.D.)

MAY 5TH, 10:30AM

In

EE 405

777 Glades Road

Boca Raton, FL

ABSTRACT OF DISSERTATION

Stochastic Energy-optimization for Multi-user Wireless Networks over Fading Channels

Wireless devices in wireless networks are typically powered by small batteries that cannot be replaced or recharged in a convenient way. To prolong the operating lifetime of networks, energy efficiency has emerged as a critical issue and energy-efficient resource allocation designs have been extensively.

We investigated energy-efficient schemes to prolong the network operating life-time: wireless sensor network and wireless relay network. In Chapter 2 we consider the energy-efficient resource allocation that minimizes a general cost function of average user powers for small- or medium-scale wireless sensor networks, where the simple time-division multiple-access (TDMA) is adopted as the multiple access scheme. A class of beta-fair cost functions is derived to balance the tradeoff between efficiency and fairness in energy-efficient designs. Based on such cost functions, optimal channel-adaptive resource allocation schemes are developed for both single-hop and multi-hop TDMA sensor networks. In Chapter 3, we develop optimal power control methods to balance the tradeoff between energy efficiency and fairness for wireless cooperative networks. It is important to maximize power efficiency by minimizing power consumption for a given quality of service such as the data rate; it is equally important to evenly or fairly distribute power consumption to all nodes to maximize the network life. Our optimal power control policy is derived in a quasi-closed form by solving a convex optimization problem with a properly chosen cost-function. To further optimize wireless relay network, in Chapter 4 we consider an orthogonal frequency division multiplexing (OFDM) based multi-user wireless relay network where each subcarrier can be dynamically assigned to a source-destination link, and several relays assist communication between couples of source-destination pairs over their assigned subcarriers. At last, we summarize the proposed energy-efficient schemes and discuss the future work.

DEPARTMENT: COMPUTER & ELECTRICAL
ENGINEERING AND COMPUTER SCIENCE

DISSERTATION TITLE: “Stochastic Energy-optimization
for Multi-user Wireless Networks over Fading Channels”

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