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THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

Providing Incentives for Wireless Peer-to-Peer Networks

by
Professor I-Hong Hou
Texas A&M University
U.S.A.

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The Chinese University of Hong Kong

Abstract

Wireless Peer-to-Peer (P2P) systems allow mobile users to obtain data from nearby peers instead of the far away base station. It has the benefits of reducing power consumption, increasing capacity, etc. An important challenge for P2P networks is to incentivize users to contribute by sharing the data that others need. Due to the broadcasting nature of wireless transmissions, existing solutions for wireline P2P networks cannot be applied.

In this talk, we present two non-monetary protocols for wireless P2P networks. We assume that each mobile user aims to increase its download rate and to decrease its transmission rate. We propose a fully distributed protocol where mobile users determine which one to transmit through random backoff. We derive a closed-form formulation for the Nash Equilibrium, and propose a distributed mechanism under which strategies of mobile users converge to the Nash Equilibrium. Next, we consider systems where a centralized broker schedules transmissions for all mobile users. We propose a scheduling policy for the broker, and demonstrate that the policy is truthful in the sense that all mobile users maximize their own utilities by reporting their true values to the broker.

Biography

I-Hong Hou received the B.S. in Electrical Engineering from National Taiwan University in 2004, and his M.S. and Ph.D. in Computer Science from University of Illinois, Urbana-Champaign in 2008 and 2011, respectively. He is currently an Assistant Professor at the Department of Electrical and Computer Engineering of the Texas A&M University. His research interests include wireless networks, wireless sensor networks, real-time systems, distributed systems, and vehicular ad hoc networks.

**** ALL ARE WELCOME ****

Host: Professor Jianwei Huang (Tel: 3943-8353, Email: jwhuang@ie.cuhk.edu.hk)
Enquiries: Information Engineering Dept., CUHK (Tel.: 3943-8385)