

Department of Computer Science
University of Houston

FALL 2012 SEMINAR

WHEN: THURSDAY, SEPTEMBER 20, 2012

WHERE: PGH 550 – note room #

TIME: 1:00 PM – note time

SPEAKER: Dr. I-Hong Hou, Texas A&M University

Host: Dr. Rong Zheng

TITLE: Supporting Delay Guarantees over Unreliable Wireless Channels

Abstract:

Many modern and future applications of wireless networks require a strict per-packet delay bound. Such applications include VoIP, video streaming, real-time monitoring, and networked control. Using wireless networks to serve such applications is particularly challenging, as wireless transmissions are inherently unreliable due to shadowing, fading, and interference. Therefore, most current mechanisms, which only provide “best-effort” service, are not suitable for such applications.

In this talk, I propose a rich analytical model that jointly addresses the application specifications and the unreliable nature of wireless transmissions. Based on this model, I provide solutions to three important problems: admission control, scheduling, and utility maximization. I propose an admission control policy that characterizes precisely when the demands of clients are feasible under the specified wireless limitations. Then I exhibit an on-line scheduling policy that fulfills the demands of all feasible systems. I next present a policy that maximizes a utility when the timely-throughput requirements are elastic. Finally, I show how to employ rate adaptation, which enhances transmission reliability by using an appropriate transmission rate.

Bio:

I-Hong Hou is an assistant professor in the ECE Department of the Texas A&M University. He received his Ph.D. from the Computer Science Department of the University of Illinois at Urbana-Champaign. His research interests include wireless networks, wireless sensor networks, real-time systems, distributed systems, and vehicular ad hoc networks. He received the C.W. Gear Outstanding Graduate Student Award from the University of Illinois at Urbana-Champaign, and the Silver Prize in the Asian Pacific Mathematics Olympiad.