CSE 6344: Advanced Topics in Networking

Time**:**   Tuesday & Thursday 7:00 --8:20 pm

Location: WH 308

Course description:

With the rapid evolution of wireless network technology and the explosive growth in wireless network services, wireless communications is becoming a ubiquitous means of transport of information with various characteristics and diverse performance requirements. However, serious impediments make it an extreme difficult problem to provide QoS over wireless networks. For example, the dynamic channel capacity that varies with time and space, the heterogeneity of application traffic, the dynamic network topology, and physically limited resources.

Recently, one of most active research topics in wireless networking is cross-layer optimization. With reference to the protocol stack, the concept of cross-layer optimization refers to the joint optimization of techniques crossing adjacent or even non-adjacent layers of the stack. Cross-layer techniques adapt the link/network/transport parameters to the channel status, or the application requirements to optimize the performance. Particularly, cross-layer optimization requires mutual adaptation of the parameters of separate layers, based upon the channel and/or application characteristics.

This course will build understanding the principles of cross-layer design, study the gains that can be achieved by the means of cross-layer approach, and discuss the impact on the future wireless networks. In particular, we will discuss the recent research results on cross-layer protocols and algorithms at physical layer, link layer, network layer, transport layer and application layer.

This is a research oriented course. Some topics are presented by students. Coursework consists of four parts: (1) one individual presentation of a research paper; (2) project report (no more than 12 pages) performed by a team; (3) reading summaries (one paragraph) for all presented papers; (4) homework

Instructor: Chengzhi Li

Office Location: NH 304

Office Hours: Tuesday & Thursday 4:00 -- 5:00 pm

Web Page: http://ranger.uta.edu/~li/classes.html

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Course Material: Selected papers from various journals and conferences will be used.

Prerequisites: Graduate standing, reasonable background in wired/wireless networking and comfortable with math.

Enrollment: A maximum number of 15 students may enroll in this class.

Course Grading: Presentation: 25%, Project Report: 25%, Reading Summaries: 15%, Final Exam: 15 %, Homework: 10%, Class Participation: 10%