

SEMINAR NOTICE

Department of Electrical and Systems Engineering

ADAPTIVELY PREDICTIVE CLUSTERING OF MIMO BEAMFORMING CONSIDERING CO-CHANNEL INTERFERENCE IN TIME VARYING WIRELESS CHANNEL

DISSERTATION DEFENSE

by

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Abstract: There has been significant effort to enhance the capacity of wireless communication channels. For example, results have been reported for MIMO (Multiple Input Multiple Output), spatial and temporal multiplexing, channel diversity, and power and direction controlled beamforming.

In this talk, we discuss issues associated with clustered cells, like the ones we see in today's wireless networks. Specifically, we consider basestations as a set of cooperating agents, *i.e.*, the Coordinated Multi-Point (CoMP) model, each of which can provide spatial and temporal multiplexing to enhance the signal to noise ratio in the wireless channel. Of particular concern in this talk is the performance of the wireless channel near the cell boundaries where a mobile device can receive significant interference from adjacent base stations.

We propose a method for adaptively clustering basestations to minimize multi-cell interferences. Our method clusters basestations depending on predicted interference patterns among them at the cell boundaries. The proposed method uses autoregressive channel models and the CoMP MIMO beamforming. The proposed method has been verified to improve the channel capacity, especially when there is a limited amount of feedback for the channel. We apply our method to the wireless relay network to increase the coverage of cellular system at cell boundary area.

DATE: Wednesday, May 4, 2011
TIME: 10:00 a.m.
PLACE: Bryan Hall, Room 305

Thesis advisor:
Dr. Paul Min

This seminar is in partial fulfillment
of the Doctor of Science degree