EE 5581   October 19, 2005

Information Theory & Coding   Prof. Jindal

Project Information

A research project related to a topic in information theory is a required portion of this course. You should select 2-3 important papers on your topic and provide a detailed summary and compare and contrast the ideas from the different papers. In addition to summarizing the main ideas, you should also identify possible weaknesses in the papers and suggest areas where the work can be improved or extended. If you wish to be more ambitious, you can also do some original research on your selected topic, in addition to the literature survey (note that the original research component is not required).

- **Project Proposal:** A one-page proposal describing your project area and listing and briefly summarizing the papers you will be reading must be emailed to me by November 14.

- **Project Report:** A final writeup of the project is due on the last day of classes, Wednesday, December 14. The writeup should be between 5 and 10 pages (11 point, single spaced).

A short list of potential topics:

- Universal source coding

- Arithmetic coding

- Zero-error channel capacity

- MIMO channel capacity

- Capacity of channels with memory

- Algorithms for computing channel capacity and the rate-distortion function

- Bounds on the performance of block channel codes (error exponents)

- Low-density parity check (LDPC) codes

- Quantum information theory

- Information theory and biology

By no means should you feel limited to these areas - any information theory related topic with sufficient scope should be okay. I strongly encourage you to speak with me about your ideas for the project before the proposal deadline.