Course Website

Course materials will be posted on the course website:

`http://www.cs.princeton.edu/courses/archive/fall11/cos597D/`

Instructor and Lectures Info

Instructor	**Office**	**Email**	**Office Hours**
Mark Braverman	*CS Building 411*	`mbraverm@cs.princeton.edu`	*MW 4:30-5:30pm or by appointment*

Lecture: *Time:* MW 3:00-4:20pm   *Place:* Friend 108

Textbook

A general textbook on information theory, that is recommended (but not required) is *Elements of Information Theory* by Cover and Thomas. Lecture notes and papers will be posted on the course website throughout the term.

Outline

We will explore information theory and recent research in computer science that applies information-theoretic techniques. We will start by developing the basic notions from information theory, such as Shannon's entropy, mutual information and Kolmogorov complexity. We will then proceed to explore applications in several areas including combinatorics, communication complexity, and data structures lower bounds.

The tentative list of topics to be covered (not necessarily in this order) includes:

- Basic information theory;
- Graph entropy;
- Communication complexity;
- Data structure lower bounds;
- Kolmogorov complexity.

Grading

The grading will be based on three components:

- 2-4 assignments (a total of 10-15 problems) – 30%;
- scribing lectures – 30%;
- a final presentation and participation – 40%.