

Course Announcement

Fall 2009 NEW Course Announcement:

EE 599 --- Large Scale Systems and Message Passing Algorithms

Instructor: Alex Dimakis
(www-rcf.usc.edu/~dimakis/teaching.html)

Lectures: Two 1hr and 20min lectures weekly, every Monday and Wednesday, 3:30-4:50PM

Location: room TBD

Office Hours: Mondays 5:00-6:00PM

Course Description: This course will focus on recent developments for inference in systems with a large number of random variables. The lectures will build up knowledge on: Graphical models for communication, storage and statistical inference. Sparse-Graph Codes. Fountain Codes and Network coding. Belief propagation and linear programming relaxations for hard combinatorial problems. Gossip algorithms. Convergence analysis based on Markov Chain Monte Carlo techniques. Compressed sensing and recovery of sparse signals.

Prerequisites: Basic probability (at the level of EE464/ EE465) and mathematical maturity. The course will focus on proving techniques and analytical tools for theoretical research.

Grading: Homework: 40% Research Project: 60%

Participants shall review, write a report and give a short presentation on a recent research paper or general area related to the course. The choice of paper shall be agreed upon together with the instructor.

Textbooks: The course will be based in parts on recent research papers and the following books:

M. J. Wainwright and M. I. Jordan Graphical models, exponential families, and variational inference. Foundations and Trends in Machine Learning, Vol. 1, December 2008

D.J.C. MacKay, Information Theory, Inference, and Learning Algorithms, Cambridge University Press (2003)

