



The University of Chicago
Department of Statistics

Seminar Series

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**High Dimensional Statistical Analysis
for Complex Sparse Estimation Problems**

MONDAY, November 22, 2010, at 4:00 PM

133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

This talk presents theoretical results for high dimensional statistical estimation procedures involving sparse regularization. I will discuss three types of problems with increasing level of complexity.

First, I will discuss the standard sparse estimation problem, and focus on results for convex relaxation (Lasso) versus forward greedy algorithm (OMP) under different conditions. In particular I will illustrate their weakness and show how to improve these methods with multi-stage convex relaxation and adaptive forward backward greedy procedures.

Second, I will discuss results for structured sparsity that require more complex vector regularization formulations. In particular I will present a theoretical framework for structured sparsity which we developed recently to explain structured sparsity and a new estimation procedure based on the theory.

Third, I will discuss mixed sparsity and low-rank matrix regularization; present some new results and discuss their implications.

The talk illustrates some theoretical questions we try to answer for modern statistical machine learning procedures; how these theoretical results help us to understand the behavior of different algorithms and how these results can guide us to improve the underlying algorithms.

Collaborators: Junzhou Huang and Daniel Hsu and Sham Kakade.

For further information and about building access for persons with disabilities, please contact Laura Rigazzi at 773.702.8333 or send email (lrigazzi@galton.uchicago.edu). If you wish to subscribe to our email list, please visit the following web site: <https://lists.uchicago.edu/web/info/statseminars>.