

# DEPARTMENT OF STATISTICS SEMINAR SERIES

SIDNEY SMITH HALL, ROOM SS1083

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**THURSDAY, 29 NOVEMBER 2012 AT 3:30PM**

## *GRAPH ESTIMATION*

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The graphical model has proven to be a useful abstraction in statistics and machine learning. The starting point is the graph of a distribution. While often the graph is assumed given, we have been studying the problem of estimating the graph from data. In this talk we present several nonparametric and semiparametric methods for graph estimation. One approach is a nonparametric extension of the Gaussian graphical model that allows arbitrary graphs. For the discrete Gaussian (Ising model), we use parallel neighborhood selection with L1-regularized logistic regression. Alternatively, we can restrict the family of graphs to spanning forests, enabling the use of fully nonparametric density estimation in high dimensions. When additional covariates are available, we propose a framework for graph-valued regression. The resulting methods are easy to understand and use, theoretically well supported, and effective for modeling and exploring high dimensional data.

Joint work with Han Liu, Pradeep Ravikumar, Martin Wainwright, and Larry Wasserman.

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Light refreshments will be served at 3:10 p.m.