The University of Chicago
Department of Statistics

Seminar Series

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Objective Bayesian Model Selection in Gaussian Graphical Models

MONDAY, November 19, 2007 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue
Refreshments following the seminar in Eckhart 110.

ABSTRACT

This talk presents a default model-selection procedure for Gaussian graphical models that involves three new developments. First, I'll develop an objective version of the hyper-inverse Wishart prior for restricted covariance matrices, called the HIW g-prior, and show how it corresponds to the implied fractional prior for covariance selection using fractional Bayes factors. Second, I'll apply a class of priors that automatically handles the problem of multiple hypothesis testing implied by covariance selection. Numerical experiments show that these priors strongly control the number of false edges included in the model, thereby automatically rewarding sparsity.

Finally, I will describe a serial algorithm called feature-inclusion stochastic search, or FINCS, that uses online estimates of edge-inclusion probabilities to inform the process of model determination in Gaussian graphical models.

The presented methods are illustrated through a variety of simulated examples, concluding with a real example analyzing covariation in mutual-fund returns.

Please send email to Mathias Drton (drton@galton.uchicago.edu) for further information. Information about building access for persons with disabilities may be obtained in advance by calling Karen Gonzalez (Department Administrator and Assistant to Chair) at 773.702.8335 or by email (karen@galton.uchicago.edu).