The University of Chicago
Department of Statistics

Seminar Series

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Algebraic Geometry of Gaussian Bayesian Networks

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

ABSTRACT

Conditional independence models for Gaussian random variables are algebraic varieties in the cone of positive definite matrices. We explore the geometry of these varieties in the case of Bayesian networks, with a view towards generalizing the recursive factorization theorem. When some of the random variables are hidden, non-independence constraints are need to describe the Bayesian networks. These non-independence constraints have potential inferential uses for studying collections of random variables. In the case that the underlying network is a tree, we give a complete description of the defining constraints of the model and show a surprising connection to the Grassmannian. Algebraic prerequisites will be kept to a minimum, so the talk should be accessible to a general audience.

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).