DIVISION OF STATISTICS  
NORTHERN ILLINOIS UNIVERSITY

Colloquium

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TITLE: A Marginalization Approach to High Dimensional Covariance Matrix Estimation

DATE: Friday October 11, 2013

TIME: 2:00 p.m.

PLACE: DUSABLE HALL 212

COFFEE: Following the talk, in DU 359

Abstract

Estimation of the covariance matrix, especially in higher dimensions is a challenging statistical problem which is of great interest in many applications especially in genetics and genomics. The existing methods of estimation pose a number of challenges even when the dimension of the covariance matrix is moderately large and in such situations the usual solution is to assume a structure for the true covariance matrix. However, in reality such constraints might not be meaningful. In this paper estimation of the unconstrained covariance matrix is considered. An orthogonally invariant estimator is proposed by considering the marginal distribution of eigenvalues. The marginal distribution is analytically intractable, hence an approximation for the likelihood function is considered, and maximum likelihood is also penalized to obtain an improved estimator. The performance of these estimators is investigated via simulations.