THE UNIVERSITY OF CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Estimation of High-Dimensional Covariance Matrices

THURSDAY, November 8, 2012, at 8:30 AM

110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

Estimation of high-dimensional covariance matrices is a challenging problem and it has become a popular topic that attracts many researchers. In this paper, we review some recent developments of high-dimensional covariance matrix estimation techniques under different settings. Under the i.i.d. sample setting, we first present thresholding, banding, and tapering methods. Then optimal convergence rates obtained by using minimax estimators under different settings are reviewed. Under time-dependent setting, we mainly reviewed two problems. The first one is auto-covariance matrices estimation for stationary process. Another one is estimation of covariance matrices when samples are temporally correlated. Finally, we present simulation results for some estimators reviewed in this paper.
