Department of Statistics

MASTER'S THESIS PRESENTATION

YANGZE ZHOU

Department of Statistics
The University of Chicago

One-Stage Asymptotically Normal and Efficient Estimation of Covariate-Adjusted Graphical Models

THURSDAY, February 15, 2018, at 10:45 AM
Jones 304, 5747 S. Ellis Avenue

ABSTRACT

Graphical model is a powerful tool to explore the relationships between random variables in high dimensional setting. Chen, et al.(2015) introduced a tuning-free two-step procedure to estimate the covariate-adjusted Gaussian graphical model. The estimator is asymptotically normal and efficient for each finite subgraph. In this paper, we simplify the two-step procedure into a one-step procedure under mild different assumptions to improve computation complexity. We use the properties of gaussian model to derive the one-step procedure, and a scaled lasso penalization is applied to obtain the estimator. In simulation studies, our method get similar results as the original procedure. Theoretical properties of the estimator is studied. This method is also extended to the high-dimensional nonparanormal graphical models via Kendall's tau based covariance matrix estimator. After unknown marginal transformations, the procedures are easy to implement and perform well numerically.