

High dimensional semiparametric estimate of latent covariance matrix for matrix-variate

Abstract

Estimation of the covariance matrix of high dimensional matrix-variate is an important issue. Many methods have been developed, based on sample covariance matrix under the Gaussian or sub-Gaussian assumption. However, sub-Gaussian assumption is restrictive and the estimate based on the sample covariance matrix is not robust. In this paper, we consider the estimate of covariance matrix for high dimensional matrix-variate in the frame of Meta-elliptical distribution, based on the Kendall's τ correlation. Since the covariance matrix of matrix-variate is commonly assumed to own some low dimension structure, we consider the structure of Kronecker expansion in this paper. The asymptotic results of the estimator are established. Simulation results and real data analysis confirm the effectiveness of our method.