Sparse Matrix Estimation Based on Greedy Algorithms and Information Criteria

黃學涵

中央研究院統計科學研究所

Abstract

We consider the problem of estimating the covariance matrix of serially correlated vectors whose dimension is allowed to be much larger than the sample size. We propose using the orthogonal greedy algorithm (OGA) together with a high-dimensional Akaike's information criterion (HDAIC) to estimate the matrix, and show that the proposed estimate is rate optimal under a sparsity condition more flexible than those in the existing literature. When the covariance matrix is bandable, we introduce a banding/tapering estimate whose parameters are chosen by a novel information criterion. The rate optimality of the latter estimate is also established.