

Sparse Mean Estimation in High Dimensional Data

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Abstract

In this talk, we study a convex penalized likelihood method for estimating the difference of the mean vectors from two independent normal groups with same covariance matrix. It is well known that the likelihood function of the difference of the mean vectors involves the covariance matrix which is nuisance parameter. We substitute a thresholding estimator of the covariance matrix for that, then estimate the difference of the mean vectors by maximizing the convex penalized likelihood function. Under high dimensional framework in which the sample size and the dimension tend to infinity, we establish several theoretical results for the estimator such as consistency, asymptotic normality and support recovery. Theoretical and numerical comparisons between the proposed method and several existing methods are also conducted. a