

Eigenvalue estimation of covariance matrices of large dimensional data

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Abstract

In many recent applications, one has to face high-dimensional datasets, where the number of available samples is of the same order as the dimension of each observation (although usually larger).

In this presentation, we shall address the problem of estimating the covariance matrix associated to such a dataset. Of course, in such a case, the traditional empirical estimator of the covariance matrix fails to be consistent and we shall rely on techniques based on large random matrix theory. We will present results associated to parametrized covariance matrices, where the number of distinct eigenvalues is known. We will also present estimation results of specific linear statistics. The main motivations come from wireless communication issues and will be briefly presented if time permits.

Keywords

Estimation, Large random matrix, Wireless communication applications.