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Regularyzacja i estymacja macierzy kowariancji o strukturze liniowej

Abstract

The doctoral dissertation is dedicated to the regularization and estimation of linearly structured covariance matrices, which have broad applications in various fields. The aim of the thesis is to propose a method of identification of the structure of linearly structured covariance matrix, followed by the modification of its classical estimator using orthogonal projection and structured shrinkage method. The resulting estimator is positive definite and well conditioned. Moreover, the statistical properties are examined through simulation studies and compared with the linearly structured maximum likelihood estimator.

Two algorithms are presented in the thesis: one for determination of the minimum of the appropriate divergence function that is used to identify the structure of covariance, and the second to compute the estimate of linearly structured covariance matrix being positive definite and well conditioned using maximum likelihood method.

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