Conjugate priors for covariance matrices

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Abstract

An accurate estimation of the covariance or precision matrix of a multivariate normal distribution is a central problem in the analysis of high-dimensional data. It is a difficult task due to the high number of parameters in such matrices. A Bayesian approach to the problem requires the use of prior distribution for these matrices and the development of sampling techniques from their posterior. We will review the priors developped over recent years that have the additional property of conjugacy. In particular, we will try to identify their common traits and what are the features that cause their differences.