Statistics > Methodology

Informative Bayesian inference for the skew-normal distribution

Antonio Canale, Bruno Scarpa

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Motivated by the analysis of the distribution of university grades, which is usually asymmetric, we discuss two informative priors for the shape parameter of the skew-normal distribution, showing that they lead to closed-form full-conditional posterior distributions, particularly useful in MCMC computation. Gibbs sampling algorithms are discussed for the joint vector of parameters, given independent prior distributions for the location and scale parameters. Simulation studies are performed to assess the performance of Gibbs samplers and to compare the choice of informative priors against a non-informative one. The method is used to analyze the grades of the basic statistics examination of the first-year undergraduate students at the School of Economics, University of Padua, Italy.

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