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On Bayesian Inference with Conjugate Priors for Scale Mixtures of Normal Distributions

Vee Ming Ng

School of Chemical and Mathematical Sciences, Murdoch University, Murdoch 6150, Australia.

Email: V.Ng@murdoch.edu.au

Abstract

Bayesian inference is considered for the multivariate regression model with distribution of the random responses belonging to the multivariate scale mixtures of normal distributions. The posterior distribution of the regression parameters and the predictive distribution of future responses for the model are derived when the prior distribution of the parameters is from the conjugate family and they are shown to be identical to those obtained under normally distributed random responses. This gives inference robustness with respect to departures from the reference case of independent sampling from the normal distribution.

Keywords: Multivariate regression, scale mixtures normal, conjugate prior, posterior and predictive distributions.

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