Bayesian Analysis of Multivariate Gaussian Mixtures with an Unknown Number of Components

Inchi Hu

Hong Kong University of Science and Technology (imichu@ust.hk)

Summary. This talk presents a method of fully Bayesian inference for multivariate Gaussian mixtures using the reverse jump Markov chain Monte Carlo algorithm. Under preserving the first two moments before and after the split and combine moves, Richardson and Green (1997) first applied the reverse jump Markov Monte Carlo algorithm to univariate Gaussian mixture models. The algorithm surpasses preceding algorithms in that it can do the model selection and parameter estimation as the same time. As such, the algorithm allows much richer information to be obtained from the output. We present the first genuine multi-variate extension of Richardson and Green (1997). Experimental results and simulated and real data sets demonstrate the efficacy of our algorithm.