

International Society for Bayesian Analysis, 9th World Meeting,
Hamilton Island, Australia, 2008.

AUXILIARY MIXTURE SAMPLING - SIMPLE MCMC FOR NON-GAUSSIAN MODELS

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Applied statisticians often have to deal with modelling discrete-valued response variable, in particular binary, multinomial or count data, in terms of covariates. These models typically take the form of (dynamic) generalized linear models involving latent variables, like mixed effect models, or state space models. Parameter estimation for these types of models is known to be computationally demanding and sophisticated numerical techniques have been applied like importance sampling or a Metropolis-Hastings algorithm.

This talk will review a simple method for the MCMC estimation of such models based on auxiliary mixture sampling. Auxiliary mixture sampling allows straightforward estimation for rather general parameter-driven models for discrete-valued data like random effect models, mixture models or state space models.

Furthermore, it will be demonstrated that auxiliary mixture sampling is particularly useful for implementing model space MCMC methods for such model. Applications to variable selection for logistic regression models, covariance selection for non-Gaussian random effects models and model specification for a Poisson state space model will be discussed.