

Bayesian Analysis of Change Point Problems Using Conditionally Specified Priors

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Abstract : In this talk, we introduce a new class of conjugate prior distributions obtained from conditional specification methodology. We illustrate the application of such distribution in Bayesian change point detection in Poisson processes. We obtain the posterior distribution of model parameters using a general bivariate distribution with gamma conditionals. Simulation from the posterior is readily implemented using a Gibbs sampling algorithm. The Gibbs sampling is implemented even when using conditional densities that are incompatible or only compatible with an improper joint density. The application of such methods will be demonstrated using examples of simulated and real data.

Keywords : change point, bayesian inference, Gibbs sampler, conditional specification, gamma conditional distributions

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