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**Bayesian density estimation and inference using mixtures.** (English) Zbl 0826.62021

*J. Am. Stat. Assoc.* 90, No. 430, 577-588 (1995).

Summary: We describe and illustrate Bayesian inference in models for density estimation using mixtures of Dirichlet processes. These models provide natural settings for density estimation and are exemplified by special cases where data are modeled as a sample from mixtures of normal distributions. Efficient simulation methods are used to approximate various prior, posterior, and predictive distributions. This allows for direct inference on a variety of practical issues, including problems of local versus global smoothing, uncertainty about density estimates, assessment of modality, and the inference on the numbers of components. Also, convergence results are established for a general class of normal mixture models.

**MSC:**

[62F15](#) Bayesian inference

[65C99](#) Probabilistic methods, stochastic differential equations

[62G07](#) Density estimation

Cited in **2** Reviews  
Cited in **378** Documents

**Keywords:**

kernel estimation; multimodality; posterior sampling; smoothing parameter estimation; density estimation; mixtures of Dirichlet processes; mixtures of normal distributions; simulation methods; prior; posterior; predictive distributions; convergence results

**Software:**

[BNPmix](#)

**Full Text:** [DOI](#)