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Sampling the Dirichlet Mixture Model with Slices

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Abstract

We provide a new approach to the sampling of the well known mixture of Dirichlet process model. Recent attention has focused on retention of the random distribution function in the model, but sampling algorithms have then suffered from the countably infinite representation these distributions have. The key to the algorithm detailed in this article, which also keeps the random distribution functions, is the introduction of a latent variable which allows a finite number, which is known, of objects to be sampled within each iteration of a Gibbs sampler.

Keywords:

Bayesian nonparametrics

Density estimation

Dirichlet process

Gibbs sampler

Slice sampling

Mathematics Subject Classification:

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