

An approximate Bayesian marginal likelihood approach for estimating finite mixtures

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Estimation of finite mixture models when the mixing distribution support is unknown is an important problem. This paper gives a new approach based on a marginal likelihood for the unknown support. Motivated by a Bayesian Dirichlet prior model, a computationally efficient stochastic approximation version of the marginal likelihood is proposed and large-sample theory is presented. By restricting the support to a finite grid, a simulated annealing method is employed to maximize the marginal likelihood and estimate the support. Real and simulated data examples show that this novel stochastic approximation--simulated annealing procedure compares favorably to existing methods.

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