

# Big Data: Modeling, Estimation and Selection



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## Approximate Bayesian inference for large datasets

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Light and Widely Applicable (LWA-) MCMC is a novel approximation of the Metropolis-Hastings kernel targeting a posterior distribution defined on a large number of observations. Inspired by Approximate Bayesian Computation, we design a Markov chain whose transition makes use of an unknown but fixed fraction of the available data, where the random choice of sub-sample is guided by the fidelity of this sub-sample to the observed data, as measured by summary (or sufficient) statistics. LWA-MCMC is a generic and flexible approach, as illustrated by the diverse set of examples which we explore. In each case LWA-MCMC yields excellent performance and in some cases a dramatic improvement compared to existing methodologies.

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