Special Issue

Developments and Applications of Markov Chain Monte Carlo in Bayesian Inference

Message from the Guest Editors

Markov Chain Monte Carlo (MCMC) algorithms are now routinely used in Bayesian statistics for sampling from the posterior distribution of all unknown quantities in a model, for which direct sampling would be difficult. There are many situations, however, where it is impractical or even impossible to draw the samples, e.g., with massive datasets or in the case for intractable likelihood models. Further, the efficiency of MCMC depends on how the underlying geometry of the problem is taken into account when designing the transition kernel, especially for target distributions with complex dependence structures. In this case, a naive implementation may suffer from a very slow exploration of the target distribution. This Special Issue invites the submission of papers that aim at advancing computational developments in Bayesian statistics, with particular emphasis on Markov chain Monte Carlo methods and their variants. Papers are expected to contribute to the design of efficient algorithms or improve existing ones, in challenging applications. Therefore, the Special Issue welcomes both novel methodological and application-focused contributions to the area.

Guest Editors

Dr. Ricardo Sandes Ehlers

Institute of Mathematical and Computer Sciences, University of São Paulo, São Carlos 13566-590, Brazil

Prof. Dr. Robertas Alzbutas

1. Department of Applied Mathematics, Faculty of Mathematics and Natural Sciences, Kaunas University of Technology, K. Donelaičio g. 73, 44249 Kaunas, Lithuania
2. Lithuanian Energy Institute, Breslaujos St. 3, 44403 Kaunas, Lithuania

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Editor-in-Chief

Prof. Dr. Kevin H. Knuth
Department of Physics, University at Albany, 1400 Washington Avenue, Albany, NY 12222, USA

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