

Scaling priors in two dimensions for Intrinsic Gaussian Markov Random Fields

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Abstract

Intrinsic Gaussian Markov Random Fields (IGMRFs) can be used to induce conditional dependence in Bayesian hierarchical models. IGMRFs have both a precision matrix, which defines the neighbourhood structure of the model, and a precision, or scaling, parameter. Previous studies have shown the importance of selecting the prior of this scaling parameter appropriately for different types of IGMRF, as it can have a substantial impact on posterior results. Here, we focus on the two-dimensional case, where tuning of the parameter's prior is achieved by mapping it to the marginal standard deviation of a two-dimensional IGMRF. We compare the effects of scaling various classes of IGMRF, including an application to blood pressure data using MCMC methods.

Keywords

Priors, Intrinsic Gaussian Markov Random Fields, MCMC, Precision, Scaling, Two-dimensional problems..

References:

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