Bayesian Inference for Structured Spike and Slab Priors - DTU Orbit (08/11/2017)

Bayesian Inference for Structured Spike and Slab Priors

Sparse signal recovery addresses the problem of solving underdetermined linear inverse problems subject to a sparsity constraint. We propose a novel prior formulation, the structured spike and slab prior, which allows to incorporate a priori knowledge of the sparsity pattern by imposing a spatial Gaussian process on the spike and slab probabilities. Thus, prior information on the structure of the sparsity pattern can be encoded using generic covariance functions. Furthermore, we provide a Bayesian inference scheme for the proposed model based on the expectation propagation framework. Using numerical experiments on synthetic data, we demonstrate the benefits of the model.

General information

State: Published
Organisations: Department of Applied Mathematics and Computer Science , Cognitive Systems
Authors: Andersen, M. R. (Intern), Winther, O. (Intern), Hansen, L. K. (Intern)
Pages: 1745-1753
Publication date: 2014

Host publication information

Title of host publication: Proceedings of the 28th Annual Conference on Advances in Neural Information Processing Systems 27 (NIPS 2014)
Publisher: Neural Information Processing Systems Foundation
BFI conference series: Neural Information Processing Systems (5000199)
Main Research Area: Technical/natural sciences
Conference: 28th Annual Conference on Neural Information Processing Systems (NIPS 2014), Montréal, Canada, 08/12/2014 - 08/12/2014
Links:

http://papers.nips.cc/paper/5464-bayesian-inference-for-structured-spike-and-slab-priors
Source: FindIt
Source-ID: 2288915194
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015