



THE UNIVERSITY OF CHICAGO

COMPUTATIONAL AND APPLIED MATHEMATICS COLLOQUIUM

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Bayesian Hierarchical Models: Sparsity, Convexity and Models Reduction

THURSDAY, October 31, 2019, at 4:00 PM
Jones 226, 5747 South Ellis Avenue

ABSTRACT

Sparsity promoting regularizing penalties can be recast in the Bayesian framework as finding a maximum a posteriori (MAP) estimate with conditionally Gaussian hierarchical priors models for which the prior variances of the components of the unknown are independent and follow a hyperprior from a generalized gamma family. In this talk we analyze this family of priors and identify hyperparameter combinations that lead to a globally or locally convex MAP functional. A computationally efficient alternating iterative algorithm for the solution of the MAP estimation problem is proposed. Its properties and its connections with some known sparsity promoting penalty methods are analyzed in the context of the generalized gamma hypermodels. The convergence, sparsity promoting and model reduction properties of the algorithm will be illustrated with computed examples.

Organizer:

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