



**GDRR Program Opening Workshop
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SPEAKER TITLES/ABSTRACT

Feng Liang
University of Illinois

“Bayesian Regularization: Asymptotic Properties and Computation”

A central issue in statistics and machine learning is overfitting. In this talk, we introduce a general framework for effective regularization from a Bayesian perspective. In the proposed framework, Bayesian regularization is induced from scale mixtures of Laplace priors, including the regularization from spike-and-slab Lasso priors and the double Pareto priors considered in the Bayesian literature, as well as some known regularization considered in the penalization literature as special cases. The MAP (maximum a posteriori) estimator from our method gives rise to a new non-convex penalty approximating the L_0 penalty. Our theoretical results show that the proposed Bayesian regularization enjoys optimal theoretical properties in terms of the L -infinity estimation accuracy for a large class of statistical models. For fast and efficient computation, EM algorithms can be employed to compute the MAP estimator. Our empirical studies confirm the theoretical findings regarding the attractiveness of the proposed Bayesian regularization. (The talk is based on joint work with Lingrui Gan from Facebook and Naveen N. Narisetty from University of Illinois at Urbana-Champaign.)