

SAMPLING STRATEGIES IN SPARSE BAYESIAN INFERENCE

YIQIU DONG

Regularization is a common tool in variational inverse problems to impose assumptions on the parameters of the problem. One such assumption is sparsity, which is commonly promoted using lasso and total variation-like regularization. Although the solutions to many such regularized inverse problems can be considered as points of maximum probability of well-chosen posterior distributions, samples from these distributions are generally not sparse. In this talk, we present a sampling strategy for an implicitly defined probability distribution that combines the effects of sparsity imposing regularization with Gaussian distributions. It extends the randomize-then-optimize (RTO) method to sampling from implicitly described continuous probability distributions. We study the properties of these regularized distributions, and compare the proposed method with Langevin-based methods, which are often used for sampling high-dimensional densities.