

Adaptive Markov Chain Monte Carlo Methods in Infinite Dimensions

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Abstract

Markov Chain Monte Carlo (MCMC) algorithms is, nowadays, the standard method for sampling from a generic density. In recent years a lot of attention has been put on MCMC for infinite dimensional problems, especially for inverse problems. A new set of algorithms have been developed like the Crank–Nicolson (CN) random walk, these are needed since the classical MCMC algorithms have been proven to break down in infinite dimensions. In our work we focus on adaptive version of the CN algorithms, which implies that we learn the parameters of our algorithm, while running the algorithm, i.e online learning. Adaptive MCMC (AMCMC) is well established for finite dimensional problem, however the standard adaptation methods also breaks down in infinite dimensional setting. We develop modification of them so they work in the infinite dimensional setting. Finally, we show that our algorithm outperforms state of the art algorithm on tested data sets.

References

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