

UNBIASED KINETIC LANGEVIN MONTE CARLO

Neil Chada

Markov chain Monte Carlo (MCMC) is a powerful and well-known class of methods aimed to sample from probability distributions. An issue that can arise with MCMC is that there is an induced bias associated with the burn-in period, related to the prior distribution. Unbiased estimators have recently been designed based on coupling ideas, however these methods still suffer from numerous issues which still occur within MCMC. This talk will be focused on the development of unbiased estimators which take motivation from Langevin dynamics. This approach is more simplistic in nature, and avoids using the Metropolization step, which takes motivation from the work of Rhee and Glynn. We develop two new unbiased estimators, which we compare to well-known methods on interesting model problems, such as an MNIST regression problem, Poisson soccer model. Both theory and numerical simulations demonstrate the efficiency and performance of our methods.