MCMC Confidence Intervals and Biases Without CLTs

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22th January 2021, 4pm UK time

Abstract
Most estimates of MCMC errors rely on versions of the the Markov chain Central Limit Theorem (CLT), which might not always hold and can be difficult to verify. I will discuss an alternative approach using just Chebychev's inequality together with basic variance estimates, which provides slightly larger confidence intervals (2.3 times as wide) without requiring any CLT. This approach in turn raises questions about bounds on MCMC bias and its relation to Markov chain convergence rates.