

Assessment 4 Part IV

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Question

"Suppose you want to use a Gibbs sampling to approximate the joint posterior distribution of three parameters. Can you change the order in which you simulate the parameters at every iteration?"

Answer

Gibbs sampling uses the univariate conditional distributions of each parameter (the full conditionals) given the most up to date version of the other parameters (state space). The order in which the parameters are simulated at each iteration do not matter as their full conditionals are independent of each other and thus can be changed at every iteration.

Additionally, under general conditions where: the Markov chain converges (ergodicity) to the stationary distribution, and the distribution of the parameters converge to the true posterior marginal distribution; the state space does not change over iterations. The simulation is from the same distribution at each iteration.