Markov Chain Monte Carlo Methods Shiny App

Eduardo Gomez

CSU, Chico

3/25/2019

Introduction to a Shiny App

- Interactive web application made with R
- Allows for instant changes when the user modifies the input

MCMC Methods

Bayesian statistics allows us to update our prior beliefs of some parameter of interest with new collected data to form a posterior distribution. These distributions are in the form of integrals and sometimes we can solve them but other times we cannot.

Markov chain Monte Carlo methods allow us to find information about those distributions which we can't solve.

Algorithms

The two algorithms the app focuses on are the

1. Metropolis-Hasting Algorithm
   a. Pick a random value based on the previous value and with some probability, we either accept or reject that value.
2. Hamiltonian Monte Carlo Algorithm
   a. Randomly generate a value for the momentum variable which then moves around in the distribution of interest to give us a value for the position variable.

Actual App

Link