Scalable and Efficient MCMC Algorithms for Complex Posteriors

Yian Ma, University of Washington

I will present a framework for constructing novel MCMC sampling algorithms that are scalable and efficient. The idea is motivated by introducing irreversible Markov processes -- containing continuous dynamics (SDEs) and jump processes (Metropolis-Hastings-like algorithms) -- into sampling algorithms to increase mixing rate. Then I use stochastic gradient and subsampling to decrease calculation burden. I also combined both continuous dynamics and jump processes to generalize the Metropolis Adjusted Langevin Algorithm, resulting in an irreversible MCMC algorithm that takes proposal from generic SDEs and use an acceptance-rejection step to correct it.