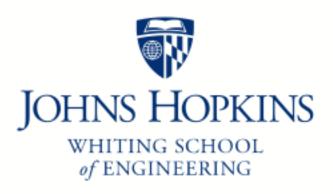
Johns Hopkins Engineering 625.464 Computational Statistics

Implementation Concerns
Part 1

Module 6 Lecture 6D



Implementation

Recall book of mcmcis to estimate features of 5, ninn m= (pix) fix) gx

We should ask:

- Has the chain run long enough!

- Isthe 1st part influenced by the starting value?

- Should the chain be run from several starting values? - Are the sampled values approx draws from t.

- thou shall we use the chain output to produce estimates & assess their Precision 7

Ensuring Good Mixing and Convergence

- 1. The mixing property of the Markov Chain.
- 2. The convergence of the Markov Chain.

Choice of Proposal

For Metropolis-Hastings we want:

- -- g should approximate f well so that the acceptance rate is high
- --prefer that f/g is bounded
- --g must be more diffuse than f
- --use an iterative process where you adjust the variance to achieve a desired acceptance rate

For Gibbs Sampling we want:

- -- the components of X to be as independent as possible
- --reparameterize to reduce dependence

Reparameterization example

Ex [
$$X_1, X_2$$
] Braniate $= [X_1 + X_2, X_1 - X_2]$
Normal

Number of Chains

How can you tell if your chain has become stuck in one or more modes?

Possible Solution: Run multiple chains from diverse stating values.