

$$p(\theta|x) = c \underbrace{p(\theta) p(x|\theta)}$$

conjugate: $q_x(\theta)$

Numerical integration: grid the space of θ ;
 evaluate q at each
 grid point; sum

Metropolis: simultaneously samples q
 efficiently
 SIR: simulate $p(\theta)$ to get efficient
 grid points

Besag's theorem:

$$P(x_1, x_2, \dots, x_k) \propto \prod_{j=1}^k P(x_j | \frac{x_{i \neq j}}{i \neq j})$$

Gibbs sampling:

Sampling all the conditionals of a joint distribution, in either regular or random order, will generate a sample from the joint distribution

Metropolis - Hastings:

If proposal distribution is not symmetric, then for disturbances characterized by probability distribution d , the Metropolis acceptance ratio is:

$$\frac{d(\theta_c) q(\theta_p)}{d(\theta_p) q(\theta_c)}$$