/20

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The MCMC algorithm:

Initialize: First iteration and

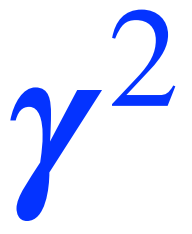
$$log(\boldsymbol{\gamma}^2) = log(0.01)\mathbf{1}$$

Proposals:

For iteration (i in $2:N$)

$$\begin{pmatrix} \alpha^* \\ \beta^* \\ \sigma^* \\ \{\mathbf{x}\}^*_{unobs} \\ \{\mathbf{y}\}^*_{unobs} \end{pmatrix} \sim N\left\{ \begin{pmatrix} \alpha^{(i-1)} \\ \beta^{(i-1)} \\ \sigma^{(i-1)} \\ \{\mathbf{x}\}^{(i-1)}_{unobs} \\ \{\mathbf{y}\}^{(i-1)}_{unobs} \end{pmatrix}, diag(\boldsymbol{\gamma}^2) \right\}$$

Accept/Reject


γ^2

Update every 50 iterations:

$$log(\boldsymbol{\gamma}^2)_k <- \begin{cases} log(\boldsymbol{\gamma}^2)_k + min\{0.01, i^{-1/2}\}, & \text{if } acceptRate_k > 0.44 \\ log(\boldsymbol{\gamma}^2)_k - min\{0.01, i^{-1/2}\}, & \text{if } acceptRate_k \leq 0.44 \end{cases}$$

Proposal variance

Proposal variance for parameter k

Optimal acceptance rate

(Roberts & Rosenthal 2001, 2008)

The MCMC algorithm:

Proposal variance

Initialize: First iteration and $log(\boldsymbol{\gamma}^2) = log(0.01)\mathbf{1}$

For iteration (i in $2 : N$)

Proposals:

$$\begin{pmatrix} \alpha^* \\ \beta^* \\ \sigma^* \\ \{\mathbf{x}\}^*_{unobs} \\ \{\mathbf{y}\}^*_{unobs} \end{pmatrix} \sim N\left\{ \begin{pmatrix} \alpha^{(i-1)} \\ \beta^{(i-1)} \\ \sigma^{(i-1)} \\ \{\mathbf{x}\}^{(i-1)}_{unobs} \\ \{\mathbf{y}\}^{(i-1)}_{unobs} \end{pmatrix}, diag(\boldsymbol{\gamma}^2) \right\}$$

Accept/Reject

Update $\boldsymbol{\gamma}^2$ every 50 iterations:

$$log(\boldsymbol{\gamma}^2)_k < - \begin{cases} log(\boldsymbol{\gamma}^2)_k + min\{0.01, i^{-1/2}\}, & \text{if } acceptRate_k > 0.44 \\ log(\boldsymbol{\gamma}^2)_k - min\{0.01, i^{-1/2}\}, & \text{if } acceptRate_k \leq 0.44 \end{cases}$$

Proposal variance for parameter k

Optimal acceptance rate

(Roberts & Rosenthal 2001, 2008)

Results