

Package ‘BayesianGLasso’

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Title Bayesian Graphical Lasso

Version 0.2.0

Description Implements a data-augmented block Gibbs sampler for simulating the posterior distribution of concentration matrices for specifying the topology and parameterization of a Gaussian Graphical Model (GGM). This sampler was originally proposed in Wang (2012) <doi:10.1214/12-BA729>.

Depends R (>= 3.0.0)

License GPL-3

Encoding UTF-8

LazyData true

Imports statmod, MASS

RoxygenNote 6.0.1

NeedsCompilation no

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blockGLasso

Block Gibbs sampler function

Description

Blockwise sampling from the conditional distribution of a permuted column/row for simulating the posterior distribution for the concentration matrix specifying a Gaussian Graphical Model

Usage

```
blockGLasso(X, iterations = 2000, burnIn = 1000, lambdaPriora = 1,
  lambdaPriorb = 1/10, verbose = TRUE)
```

Arguments

X	Data matrix
iterations	Length of Markov chain after burn-in
burnIn	Number of burn-in iterations
lambdaPriora	Shrinkage hyperparameter (lambda) gamma distribution shape
lambdaPriorb	Shrinkage hyperparameter (lambda) gamma distribution scale
verbose	logical; if TRUE return MCMC progress

Details

Implements the block Gibbs sampler for the Bayesian graphical lasso introduced in Wang (2012). Samples from the conditional distribution of a permuted column/row for simulating the posterior distribution for the concentration matrix specifying a Gaussian Graphical Model

Value

Sigma	List of covariance matrices from the Markov chain
Omega	List of concentration matrices from the Markov chains
Lambda	Vector of simulated lambda parameters

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References

Wang, H. (2012). Bayesian graphical lasso models and efficient posterior computation. *Bayesian Analysis*, 7(4). <doi:10.1214/12-BA729> .

Examples

```
# Generate true covariance matrix:
s<-.9**toeplitz(0:9)
# Generate multivariate normal distribution:
set.seed(5)
x<-MASS::mvrnorm(n=100,mu=rep(0,10),Sigma=s)
blockGLasso(X=x)

# Same example with short MCMC chain:
s<-.9**toeplitz(0:9)
set.seed(6)
x<-MASS::mvrnorm(n=100,mu=rep(0,10),Sigma=s)
blockGLasso(X=x,iterations=100,burnIn=100)
```

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