

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

Author Patrick Trainor [aut, cre],
Hao Wang [aut]

Maintainer Patrick Trainor <patrick.trainor@louisville.edu>

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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

Author(s)

Patrick Trainor (University of Louisville)
Hao Wang

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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