Package ‘abglasso’

October 12, 2022

Title  Adaptive Bayesian Graphical Lasso

Version  0.1.1

Description  Implements a Bayesian adaptive graphical lasso data-augmented block Gibbs sampler. The sampler simulates the posterior distribution of precision matrices of a Gaussian Graphical Model. This sampler was adapted from the original MATLAB routine proposed in Wang (2012) <doi:10.1214/12-BA729>.

License  GPL-3

Encoding  UTF-8

RoxygenNote  7.1.1.9000

Imports  MASS, pracma, stats, statmod

Suggests  testthat

NeedsCompilation  no

Author  Jarod Smith [aut, cre] (<https://orcid.org/0000-0003-4235-6147>), Mohammad Arashi [aut] (<https://orcid.org/0000-0003-4793-5674>), Andriette Bekker [aut] (<https://orcid.org/0000-0002-5881-9241>)

Maintainer  Jarod Smith <jarodsmith706@gmail.com>

Repository  CRAN

Date/Publication  2021-07-13 22:10:05 UTC

R topics documented:

BayesGlassoBlock .................................................. 2

Index  3
BayesGlassoBlock

Adaptive Bayesian graphical lasso MCMC sampler

Description
A Bayesian adaptive graphical lasso data-augmented block Gibbs sampler. The sampler is adapted from the MATLAB routines used in Wang (2012).

Usage
BayesGlassoBlock(X, burnin = 1000, nmc = 2000)

Arguments

- **X** Numeric matrix.
- **burnin** An integer specifying the number of burn-in iterations.
- **nmc** An integer specifying the number of MCMC samples.

Value
list containing:

- **Sig** A \( p \times p \) by \( nmc \) array of saved posterior samples of covariance matrices.
- **Omega** A \( p \times p \) by \( nmc \) array of saved posterior samples of precision matrices.
- **Lambda** A 1 by \( nmc \) vector of saved posterior samples of lambda values.

References

Examples

```r
# Generate true covariance matrix:
p <- 10
n <- 50
SigTrue <- pracma::Toeplitz(c(0.7^rep(1:p-1)))
CTrue <- pracma::inv(SigTrue)
# Generate expected value vector:
mu <- rep(0,p)
# Generate multivariate normal distribution:
set.seed(123)
X <- MASS::mvrnorm(n,mu=mu,Sigma=SigTrue)
abglasso_post <- BayesGlassoBlock(X,burnin = 1000,nmc = 2000)
```
Index

BayesGlassoBlock, 2