Package “GHS"

April 9, 2018

Type Package

Title Take Monte Carlo samples from the posterior distribution under the graphical horseshoe prior, to estimate the precision matrix for multivariate Gaussian data

Description GHS_est returns a tuple whose first element is a p by p by nmc matrices of saved posterior samples of precision matrix,second element is the p*(p-1)/2 by nmc vector of saved samples of the local tuning parameter and the third element is the 1 by nmc vector of saved samples of the global tuning parameter

Version 2018.1.1

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URL `https://github.com/srivas48/Graphical-horsehoe`

References Yunfan Li, Anindya Bhadra and Bruce A. Craig (2017). The graphical horseshoe estimator for inverse covariance matrices. Wang, H. (2012). Bayesian graphical lasso models and efficient posterior computation. Bayesian Analysis, 7(4):867-886. Makalic, E. and Schmidt, D. F. (2016). A simple sampler for the horseshoe estimator. IEE Signal Processing Letters, 23(1):179-182

LazyLoad Yes

Repository CRAN

Function GHS_est(S, n, burnin, nmc)

Arguments
S - sample covariance matrix
n - sample size
burnin - number of MCMC burnins
nmc - number of saved samples

Examples
install.packages("eigeninv")
install.packages("MASS")
library(MASS)
library(eigeninv)
burnin <- 100; nmc <- 5000; n <- 10
eig_val <- rep(1,n)
z <- eiginv(eig_val,n,symmetric=TRUE) # generates a n by n symmetric matrix having eigenvalues as per the vector eig_val
Mu <- rep(0,10) # Mean vector
Sigma <- solve(z,tol=1e-25) # Covariance matrix
Y <- mvrnorm(n, Mu, Sigma)
S <- t(Y)%*%Y
result <- GHS_est(S,n,burnin,nmc)
est_matrix <- apply(result[[1]], c(1,2), mean)
image(est_matrix)