Package ‘glassoFast’

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Type Package
Title Fast Graphical LASSO
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Description A fast and improved implementation of the graphical LASSO.
License GPL (>= 3)
NeedsCompilation yes
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glassoFast-package  glassoFast: a Fast Graphical LASSO

Description

This package propose a fast implementation of the graphical LASSO of Friedman et al. 2008 based
on the algorithm (FORTRAN subroutine) of Sustik and Calderhead (2012). This algorithm also
avoid non-termination issues observed for the "glasso" function of the R package glasso.

Details
# glassoFast

**Package:** glassoFast  
**Type:** Package  
**Version:** 1.0.1  
**Date:** 2017-06-07  
**License:** GPL (>=3.0)

The original FORTRAN Subroutine was taken from (now broken link):  
http://www.cs.utexas.edu/users/sustik/glassofast/

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**References**  

**See Also**  
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## glassoFast

*Fast graphical LASSO*

### Description

This function is a faster alternative to the "glasso" function in the glasso package (Friedman et al. 2008). This package uses the algorithm (FORTRAN subroutine) of Sustik and Calderhead (2012).

### Usage

```r
glassoFast(S, rho, thr = 1e-04, maxIt = 10000, start = c("cold", "warm"), w.init = NULL, wi.init = NULL, trace = FALSE)
```

### Arguments

- **S**  
  Covariance matrix (a p by p symmetric matrix)
- **rho**  
  The regularization parameter for lasso. (a non-negative value or a p by p matrix of regularization parameters)
- **thr**  
  Threshold for convergence. Default is 1.e-4.
Details

Estimate a sparse inverse covariance matrix using a lasso (L1) penalty, following the Friedman et al. (2008) approach. The function is a wrapper of the faster and corrected (for non-termination convergence issues) FORTRAN subroutine of Sustik and Calderhead (2012).

Value

- **w**: Estimated covariance matrix
- **wi**: Estimated inverse covariance matrix
- **errflag**: Memory allocation error flag: 0 means no error; !=0 means memory allocation error
- **niter**: Number of iterations of outer loop

Author(s)

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References


See Also

glasso

Examples

```r
set.seed(100)

# Make a random covariance matrix
p=5
x<-matrix(rnorm(p*p),ncol=p)
s<- var(x)
```
# Compute the LASSO estimates
glassoFast(s, rho=.1)

# compare with glasso

require(glasso)
glasso(s, rho=.1)

# benchmark glassoFast and glasso
require(rbenchmark)
p=100
x<-matrix(rnorm(p*p),ncol=p)
s<- var(x)
benchmark(glassoFast(s, rho=.15), glasso(s, rho=.15), replications = 100)
# up to an order of magnitude faster
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