

Package ‘rsggm’

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Type Package

Title Robust Sparse Gaussian Graphical Modeling via the
Gamma-Divergence

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Depends MASS, Matrix, glasso, QUIC

Imports methods

Description Robust estimation of sparse inverse covariance matrix via the gamma-divergence.

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URL <http://www.keihirose.com>

NeedsCompilation no

Repository CRAN

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out	<i>out (Output parameters for specific gamma and lambda)</i>
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Description

Output parameters for specific gamma and lambda

Usage

```
out(object, gamma, lambda)
```

Arguments

object	An object made by rsggm function.
gamma	A value of gamma.
lambda	A value of lambda.

Value

Omega	inverse covariance matrix
mu	mean vector
weight	weight obtained by the gamma-lasso algorithm
nedges	number of edges
lambda	lambda
gamma	gamma

Author(s)

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References

Hirose, K. and Fujisawa, H. (2015). *Robust sparse Gaussian graphical modeling, submitted*,
Fujisawa, H., and Eguchi, S. (2008). *Robust parameter estimation with a small bias against heavy
contamination, Journal of Multivariate Analysis, 99(9), 2053-2081.* <http://www.sciencedirect.com/science/article/pii/S0047259X08000456>

See Also

[rsggm](#) object

Examples

```
#generate data
set.seed(1234)
x <- rsggm.generator(N=200,p=20)

#fit the robust sparse Gaussian graphical modeling
fit <- rsggm(x,gamma=c(0.05,0.1),delta=0.2)

#output the result for specific gamma and lambda
out(fit,gamma=0.05,lambda=0.2)
```

rsggm	<i>rsggm (Robust Sparse Gaussian Graphical Modeling via the Gamma-Divergence)</i>
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Description

Robust estimation of sparse inverse covariance matrix via the gamma-divergence

Usage

```
rsggm(x, gamma, lambda, nlambda = 10, delta = 0.2, penalty.offdiag = FALSE,
      method = "glasso", maxit = 100, tol.plogL = 1e-8, msg = TRUE,
      Omega.init, mu.init)
```

Arguments

x	A data matrix.
gamma	(non-negative) A numeric vector of tuning parameters for the gamma-divergence.
lambda	(Optional) A matrix of tuning parameters for the lasso. Each column corresponds to gamma, so that the number of column must be equal to the length of gamma.
nlambda	The length of lambda if lambda is not specified. Default is 10
delta	The ratio of maximum value of lambda and the minimum value of lambda if lambda is not specified. Default is 0.2.
penalty.offdiag	If FALSE, the diagonal elements of inverse covariance are not penalized. Default is FALSE.
method	Estimation method of the graphical lasso. Default is glasso. It can be QUIC.
maxit	The maximum number of iteration.
tol.plogL	Tolerance of the maximum value of penalized likelihood estimation.
msg	If TRUE, a message is shown.
Omega.init	(Optional) The initial value of the inverse covariance matrix.
mu.init	(Optional) The initial value of the mean vector.

Value

Omega	inverse covariance matrix
mu	mean vector
weight	weight obtained by the gamma-lasso algorithm
nedges	number of edges
lambda	lambda
gamma	gamma

Author(s)

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References

Hirose, K. and Fujisawa, H. (2015). *Robust sparse Gaussian graphical modeling*, submitted,
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See Also

[out](#) object

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```
#generate data
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x <- rsggm.generator(N=200,p=20)

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```

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