Package ‘QUIC’

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BugReports sustik@cs.utexas.edu
Author Cho-Jui Hsieh [aut], Matyas A. Sustik [aut, cre], Inderjit S. Dhillon [aut], Pradeep Ravikumar [aut]
Maintainer Matyas A. Sustik <sustik@cs.utexas.edu>
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**Description**

Estimates a sparse inverse covariance matrix using a combination of Newton’s method and coordinate descent.

**Usage**

```r
QUIC(S, rho, path = NULL, tol = 1e-04, msg = 1, maxIter = 1000, X.init = NULL, W.init = NULL)
```

**Arguments**

- **S**: Covariance matrix. A $p \times p$ symmetric matrix.
- **rho**: Regularization parameter. It can be a $p \times p$ matrix, a vector or scalar.
- **path**: If specified, then rho is scaled with the elements of path and the corresponding inverse covariance matrix estimation is carried out for each value.
- **tol**: Specifies the convergence tolerance.
- **msg**: Controls how verbose messages should be printed during execution. Valid value range: 0–4.
- **maxIter**: Specifies the maximum number of Newton iterations.
- **X.init**: The initial estimate for the regularized inverse covariance matrix.
- **W.init**: The inverse of initial estimate for the regularized inverse covariance matrix.

**Value**

- **X**: Regularized inverse covariance matrix; an array of matrices when path is used.
- **W**: Inverse of the matrix X.
- **regloglik**: The optimal value for the regularized logarithmic likelihood, an array when path is used.
- **opt**: The optimal value of the minimization problem, an array when path is used.
- **iter**: The number of Newton iterations executed, an array when path is used.

**Author(s)**

Matyas A. Sustik (package maintainer), Cho-Jui Hsieh, Inderjit S. Dhillon, Pradeep Ravikumar

**References**


**S**

**ER dataset**

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**Description**

Empirical covariance matrix derived from the ER dataset. The original dimension 7027 was reduced to 692 by thresholding.

**Source**

http://www.math.nus.edu.sg/~mattohkc/Covsel-0.zip

**References**

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