Package 'perturbR'

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Type Package

Title Random Perturbation of Count Matrices

Version 0.1.3

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Description The perturbR() function incrementally perturbs network edges (using the rewireR function)and compares the resulting community detection solutions
from the rewired networks with the solution found for the original network.
These comparisons aid in understanding the stability of the
original solution. The package requires symmetric, weighted (specifically, count) matrices/networks.

Imports igraph, ggplot2

License GPL-2

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

Repository CRAN

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R topics documented:

perturbR-package *Perturb Networks*

Description

The perturbR function incrementally perturbs networks (using the rewireR function) and compares the resulting rewired networks with the orignal. These comparisons aid in understanding the stability of the cluster solution.

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exampledata *Example, symmetric weighted count matrix*

Description

This object contains a simulated 25 by 25 symmetric, weighted count matrix.

Usage

```
exampledata
```

Format

A 25 by 25 symmetric count matrix.

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perturbR *Perturb networks and evaluate subgroup structures.*

Description

Randomly rewires networks in increasing degrees of perturbation to evaluate stability of community solutions obtained from Walktrap.

Usage

```
perturbR(sym.matrix, plot = TRUE, resolution = 0.01, reps = 100,
  errbars = FALSE)
```

Arguments

sym.matrix	A symmetric, sparse count matrix object
plot	Logical, defaults to TRUE
resolution	The percentage of edges to iteratively alter. One percent is default, increase to go quicker.
reps	The number of repititions to do for each level of perturbation. Decrease to make it go quicker.
errbars	Logical, defaults to FALSE. Option to add error bars of one standard deviation above and below the mean for each point.

Examples

```
perturbR(exampledata, plot=FALSE, resolution=0.10, reps=1, errbars = FALSE)
```

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rewireR — *Rewire graph by randomly assigning new values for a given degree of perturbation.*

Description

Randomly rewires graphs by altering a specific number of edges using Bernoulli trials as described in "The weighted random graph model" by Garlaschelli, New Journal of Physics, 11, (2009), 073005. Only undirected, weigghted count matrices are considered here.

Usage

```
rewireR(sym.matrix, nperturb, dist)
```

Arguments

sym.matrix	A symmetric, sparse count matrix object.
nperturb	The number of edges to randomly alter.
dist	Option to rewire in a manner that retains overall graph weight regardless of distribution of edge weights. This option is invoked by putting any text into this field. Defaults to "NegBinom" for negative binomial.

Examples

```
rewireR(exampledata, nperturb=40, dist = "Normal")
```

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