Package ‘perturbR’

Type Package
Title Random Perturbation of Count Matrices
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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.
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perturbR-package  Perturb Networks

Description

The perturbR function incrementally perturbs networks (using the rewireR function) and compares the resulting rewired networks with the original. 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

eexampledata

Format

A 25 by 25 symmetric count matrix.

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)
rewireR

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 repetitions 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)

rewireR(sym.matrix, nperturb, dist)

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, weighted 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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