Package 'strategicplayers'

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Type Package

Title Strategic Players

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Author Miles Ott

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Description Identifies individuals in a social network who should be the intervention subjects for a network intervention in which you have a group of targets, a group of avoiders, and a group that is neither.

License GPL-3

Imports sna

RoxygenNote 5.0.1

NeedsCompilation no

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`strategicplayers-package`

Strategic Players

Description

Identifies individuals in a social network who should be the intervention subjects for a network intervention in which you have a group of targets, a group of avoiders, and a group that is neither.

Details

The DESCRIPTION file:

Package:	strategicplayers
Type:	Package
Title:	Strategic Players
Version:	1.0
Date:	2016-09-05
Author:	Miles Ott
Maintainer:	Miles Ott <miles_ott@alumni.brown.edu>
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Index of help topics:

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sp                      sp
strategicplayers-package
                        Strategic Players
```

~~ An overview of how to use the package, including the most important functions ~~

Author(s)

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References

~~ Literature or other references for background information ~~

Examples

```
require(sna)

network<-rgraph(20, tprob=.2)         #generate a bernoulli random network on 20 nodes
geo<-geodist(network)[2]$gdist        #get the geodesic distances of the network
targets<-1:10                         #defining the target group
avoids<-11:14                         #defining the avoidance group
theta<-.8                             #defining the theta parameter

spset<-sp(4, geo, targets, avoids, theta, n.loops=100)  #find sp set of size 4
spset

distance(geo, targets, avoids, theta, spset)        #calculates distance metric for spset
```

```
#plot the network with the strategic player set highlighted in yellow
colors<-rep("white", 20)
colors[targets]<-"green"
colors[avoids]<-"red"
colors[spset]<-"yellow"
par(mar=c(1,1,1,1))
gplot(network, vertex.col=colors, usearrows=FALSE,
    edge.col="grey", vertex.border="grey", vertex.cex=1.7, pad=0, label=1:dim(network)[1])
```

`distance` *distance*

Description

Takes in the geodesic distances, targets, avoiders, a parameter that prioritizes avoiding vs targetting, and the current players and returns the strategic players distance metric

Usage

```
distance(gd, targets, avoiders, theta, players)
```

Arguments

`gd`	a matrix of geodesic distances for the network of interest
`targets`	a vector of indicies of the people you want to spread the intervention to
`avoiders`	a vector of indicies of the people you don't want to spread the intervention to
`theta`	a number between 0 and 1 which weights the distance metric, 1 only prioritizes closeness to targets, 0 only prioritizes maximizing distance from avoiders
`players`	the indicies of people who you have chosen for the intervention (a subset of targets)

Value

returns the distance metric for strategic players, which we want to maximize

sp *sp*

Description

Takes in the number of intervention subjects you wish to identify, geodesic distances, targets, avoiders, and a parameter that prioritizes avoiding vs targetting, and returns the indecies of the strategic players

Usage

```
sp(n.players, gd, targets, avoiders, theta = 0.5, n.loops = 1000)
```

Arguments

n.players	the number of intervention subjects you wish to identify
gd	a matrix of geodesic distances for the network of interest
targets	a vector of indicies of the people you want to spread the intervention to
avoiders	a vector of indicies of the people you don't want to spread the intervention to
theta	a number between 0 and 1 which weights the distance metric, 1 only prioritizes closeness to targets, 0 only prioritizes maximizing distance from avoiders. Any number between 0 and 1 will be a compromise of these two goals.
n.loops	the number of loops to run, the more loops you run the more likely you are to identify the optimal set of strategic players

Value

returns the indicies for strategic players

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