Package 'strategicplayers'

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Type Package

Title Strategic Players

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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

RoxygenNote 5.0.1

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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:

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Version:	1.1
Date:	2024-02-10
Author:	Miles Ott
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```

use the sp function to get a list of strategic players indicies

Author(s)

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References

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6959850/

Examples

```
#I am commenting this all out so that the package won't require sna any more :)

#require(sna)

#generate a bernoulli random network on 20 nodes
#network<-rgraph(20, tprob=.2)

#get the geodesic distances of the network
#geo<-geodist(network)[2]$gdist

#defining the target group
#targets<-1:10
```

```
#defining the avoidance group
#avoids<-11:14

#defining the theta parameter
#theta<-.8

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

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