Package ‘dynetNLAResistance’

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**Type** Package

**Title** Resisting Neighbor Label Attack in a Dynamic Network

**Version** 0.1.0

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**Description** An anonymization algorithm to resist neighbor label attack in a dynamic network.

**Depends** R (>= 2.10)

**License** MIT + file LICENSE

**LazyData** true

**Suggests** testthat

**Imports** igraph, doParallel, foreach, grDevices, graphics, utils, parallel

**RoxygenNote** 5.0.1

**NeedsCompilation** no

**Repository** CRAN

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### anonymization

Anonymize a snapshot of a dynamic network.

#### Usage

```
anonymization(g, alpha = 1, beta = 2, gamma = 3)
```

#### Arguments

- **g**: A network grouped by lw-grouping algorithm.
- **alpha**: Weight of anonymization cost resulted from label generalization.
- **beta**: Weight of anonymization cost resulted from adding edges.
- **gamma**: Weight of anonymization cost resulted from adding nodes.

### anonymize2node

Anonymize two node.

#### Usage

```
anonymize2node(g, uid, vid, noise = g$noise)
```

#### Arguments

- **g**: A graph contains vertices with different labels and some of which are sensitive.
- **uid**: Name of a node with sensitive label.
- **vid**: Name of a node with unsensitive label.
- **noise**: Current amount of noise nodes.

#### Value

A list with information of anonymized network.
cost

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**cost**

*Calculate anonymization cost of two nodes.*

**Description**

Calculate anonymization cost of two nodes.

**Usage**

```r
cost(g, uid, vid, alpha = 1, beta = 2, gamma = 3)
```

**Arguments**

- `g`: A graph contains vertexs with different labels and some of which are sensitive.
- `uid`: Name of a node with sensitive label.
- `vid`: Name of a node with unsensitive label.
- `alpha`: Weight of anonymization cost resulted from label generalization.
- `beta`: Weight of anonymization cost resulted from adding edges.
- `gamma`: Weight of anonymization cost resulted from adding nodes.

**Value**

Anonymization cost of two nodes.

draw.graph

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**draw.graph**

*Draw a graph contains vertexs with sensitive or unsensitive label*

**Description**

Draw a graph contains vertexs with sensitive or unsensitive label

**Usage**

```r
draw.graph(g, main = NULL, label = NA)
```

**Arguments**

- `g`: A graph contains vertexs with different labels and some of which are sensitive.
- `main`: The title of graph.
- `label`: Label of vertexs.

**Examples**

```r
dynet <- make.virtual.dynamic.network()
draw.graph(dynet$t1)
```
lw.grouping

Generate a grouped dynamic network by lw-grouping algorithm.

Usage

lw.grouping(dynet = NULL, l = 2, w = 3)

Arguments

- dyenet: An ungrouped dynamic network.
- l: Kinds of labels in each unmerged group.
- w: Width of window of lw-grouping algorithm.

Value

A list of grouped network with attribute of gs.merged.

make.virtual.dynamic.network

Make a vertex-increasing virtual dynamic network.

Description

Make a vertex-increasing virtual dynamic network.

Usage

make.virtual.dynamic.network(network.data = NULL, len = 10, by = 5, label.types = 100, prop.init = 0.001, prop.sensitive = 0.1)

Arguments

- network.data: A data frame containing a symbolic edge list, which contains the information of whole network data.
- len: Time of this dynamic network lasts.
- by: The number of vertex added in network each time.
- label.types: The number of label types the network possesses.
- prop.init: The proportion of vertex amounts of initial network in whole network data.
- prop.sensitive: The proportion of amounts of vertex with sensitive label in whole network data.
network

Value
A list of snapshots of a virtual dynamic network.

Examples

dynet <- make.virtual.dynamic.network()

| network | Unirected graph: CA-CondMat |

Description
Collaboration network of Arxiv Condensed Matter category (there is an edge if authors coauthored at least one paper)

Usage

network

Format
An object of class `data.frame` with 93439 rows and 2 columns.

Details
@format A data frame with 93439 rows and 2 variables:
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