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.
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License MIT + file LICENSE
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anonymize

Anonymize a snapshot of a dynamic network.

**Description**

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.

**Description**

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**

*Calculate anonymization cost of two nodes.*

**Description**

Calculate anonymization cost of two nodes.

**Usage**

\[\text{cost}(g, \text{uid}, \text{vid}, \text{alpha} = 1, \text{beta} = 2, \text{gamma} = 3)\]

**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.

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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**

\[\text{draw.graph}(g, \text{main} = \text{NULL}, \text{label} = \text{NA})\]

**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.

Description

Generate a grouped dynamic network by lw-grouping algorithm.

Usage

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

Arguments

dynet  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.
A list of snapshots of a virtual dynamic network.

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

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

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

A data frame with 93439 rows and 2 variables:
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