Package ‘orca’

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Version 1.1-1
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Title Computation of Graphlet Orbit Counts in Sparse Graphs
Description Implements orbit counting using a fast combinatorial approach.
Counts orbits of nodes and edges from edge matrix or data frame, or a
graph object from the graph package.
License LGPL-3
Depends R (>= 3.1)
Enhances graph
NeedsCompilation yes
SystemRequirements C++11
Collate orca.R
LazyLoad yes
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karate  

**Karate Club network**

**Description**

The network representing the friendships between members of a university-based karate club, which was originally used to model the fission process with a mathematical model. The network consists of 34 nodes (club members) and 77 edges (friendships).

**Usage**

karate

**Format**

A data frame with 77 observations and 2 columns.

**Source**

https://networkdata.ics.uci.edu/data.php?id=105

**References**


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orca  

**Orbit counting**

**Description**

Count the node or edge orbits in 4- or 5- node graphlets for all nodes (edges) in the given graph.

**Usage**

  count4(graph)  
  count5(graph)  
  ecount4(graph)  
  ecount5(graph)

**Arguments**

  graph  
  A graph given as a nx2 edge matrix, a data frame with edges or a graph object from the package 'graph'. The nodes in the matrix or data frame are given by integer indices that start with 1.
**Value**

A numeric matrix or orbit counts. Rows correspond to graph nodes or edges in the same order as on the input, and the columns corresponding to orbits.

**Author(s)**

Tomaz Hocevar and Janez Demsar

**References**


**Examples**

```r
library(orca)

# Load and show the orbit counts for the Karate graph
data("karate")
count4(karate)

## Not run:
# Simple analysis of School Wikipedia network: find the most similar
# nodes with respect to the local network topology
# Requires data from http://www.biolab.si/supp/Rorca/_downloads/schools-wiki.zip

library("FNN")

nodes <- scan("schools-wiki-nodes.txt", what="", sep="\n")
edges <- read.table("schools-wiki-edges.txt")
orbits <- count4(edges)
nn <- get.knn(orbits, k=10)
neighbours <- nn$nn.index
distances <- nn$nn.dist

canada, germany, isaac newton, albert einstein, mahatma gandhi, mahabharata

node_indices <- match(check, nodes)
for (i in 1:length(check)) {
  cat("\n\n", check[i], ": ", sep="")
  cat(nodes[neighbours[node_indices[i]], ], sep="", )
  cat("\n")
  cat(round(distances[node_indices[i]], ), sep="", )
}

## End(Not run)
```
### petersen

**Petersen graph**

**Description**

The Petersen graph is a graph with 10 vertices and 15 edges, usually drawn as a pentagram within a pentagon.

**Usage**

petersen

**Format**

A data frame with 15 observations and 2 columns.

**References**


### usastates

**Contiguous USA Graph**

**Description**

The nodes of Contiguous USA Graph represent the 49 contiguous states of the USA. Two nodes are connected if there exists at least one driveable road between the corresponding states.

**Usage**

usastates

**Format**

A data frame with 107 observations and 2 columns.

**Source**

http://www-cs-staff.stanford.edu/~uno/contiguous-usa.dat

**References**

Description
The network representing interactions between 2361 proteins.

Usage
yeast

Format
A data frame with 6646 observations and 2 columns.

Source
http://vlado.fmf.uni-lj.si/pub/networks/data/bio/Yeast/Yeast.htm

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