

Package ‘Dominance’

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Title ADI (average dominance index), social network graphs with dual directions, and music notation graph

Depends R (>= 2.14.0)

Imports igraph,chron,gdata

Suggests

Description The package can calculate ADI (Average Dominance Index) and can build social network graphs with dual directions, can build a Music Notation Graph

License GPL (>= 2)

URL <http://www.r-project.org>, <http://www.Konstanze-Krueger.de/r>

BugReports see maintainer

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Dominance-package *Dominance Calculation and Graphs in Animals*

Description

The package can calculate ADI (Average Dominance Index) and can build social network graphs with dual directions, can build a Music Notation Graph

Details

The following are sources of information on **Dominance** package:

DESCRIPTION file `library(help="Dominance")`

This file package?Dominance

Some help files

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[Sociogram](#)

[Musicnotation](#)

Author(s)

Knut Krueger

Maintainer: Who to complain to <Knut.Krueger@equine-science.de>

ADI *Average Dominance Index*

Description

computes the Average Dominance Index

Usage

ADI(data_sheet, bytes, ...)

Arguments

`data_sheet` either a data.frame f.e imported from a data sheet containing
 "Name", "item.number"
 "action.from.", "action.to", "kind.of.action"
 "name.of.action", "action.number", "classification", "weighting"
 or only "action.from.", "action.to", "kind.of.action" if exists actions and items
 actions: with "name.of.action", "action.number", "classification", "weighting"
 items with "Name", "item.number"

`bytes` a string where each enabled action is set to 1 and each disabled action is set to 0

`...` dots : actions with "name.of.action", "action.number", "classification", "weighting"

Classification 1 for aggressive behaviour 2 for non aggressive behaviour like retreat

Weighting the factor which should be used to calculate the behavior (1 for aggressive -1 for none aggressive)

Setting a aggressiv behaviour to 2 means it is count double

vcolors as much colors as items, colors will returned as sorted ADI colors means color 1 = item rank 1, color 2 = item rank 2, and so on

Value

ADI returns a list with
 ADI - the Average Dominance index
 Colors - the colors supported by vcolors sorted by ADI of the items
 ADI_count_matrix - the counts from which the ADI was calculated

Author(s)

Knut Krueger, Prof. Dr. Konstanze Krueger

References

The Construction of Dominance Order: Comparing Performance of Five Methods Using an Individual-Based Model C. K. Hemelrijk, J. Wantia and L. Gygas, Behaviour Vol. 142, No. 8 (Aug., 2005), pp. 1037-1058

<http://www.jstor.org/stable/4536286>

On using the DomWorld model to evaluate dominance ranking methods , de Vries, Han, Behaviour, Volume 146, Number 6, 2009 , pp. 843-869(27)

<http://dx.doi.org/10.1163/156853909X412241>

Examples

```
## you can either use:
data_sheet=data.frame ("action.from"=c(1,4,2,3,4,3,4,3,4,3,4,3,4),
                       "action.to"=c(4,1,1,4,3,4,3,4,3,4,3,4,3),
                       "kind.of.action"= c(4,1,1,4,3,4,3,4,3,4,3,4,3),stringsAsFactors=FALSE)
items= data.frame ("Name"=c("item1","item2","item3","item4","item5","item6") ,
                  "item.number"=c(1:6),stringsAsFactors=FALSE)
actions=data.frame("name.of.action"= c("leading","following","approach","bite","threat to bite",
                                       "kick","threat to kick", "chase","retreat"),
                  "action.number"=c(1:9),
                  "classification"=c(1,2,1,1,1,1,1,1,2) ,
                  "weighting"=c(1,-1,1,1,1,1,1,1,-1),stringsAsFactors=FALSE)

## all encounters without leading and following
bytes= "0011111111"
ADI(data_sheet,items=items,actions=actions,bytes)
## or you can use a complete f.e Excel sheet
## you can save this data as basic excel sheet to work with
data(data_ADI)
bytes= "0011111111"
ADI(data_ADI,bytes)
```

data_ADI

Demodata for ADI

Description

Demodata to calculate an ADI

Usage

```
data(data_ADI)
```

Format

A data frame with 17 observations on the following 10 variables.

Name a character vector
 item.number a numeric vector
 action.from. a numeric vector
 action.to a numeric vector
 kind.of.action a numeric vector
 observation.number a numeric vector
 name.of.action a character vector
 action.number a numeric vector
 classification a numeric vector
 weighting a numeric vector

Examples

```
data(data_ADI)
```

`data_Musicnotation` *Demodata for Musicnotation*

Description

Demodata to show an Musicnotation Graph

Usage

```
data(data_Musicnotation)
```

Format

A data frame with 15 observations on the following 11 variables.

`action.from` a numeric vector

`action.to` a numeric vector

`kind.of.action` a numeric vector

`Time` a character vector

`Name` a character vector

`item.number` a numeric vector

`dominance.order` a numeric vector

`name.of.action` a character vector

`action.number` a numeric vector

`classification` a numeric vector

`weighting` a numeric vector

Examples

```
data(data_Musicnotation)
```

`data_Network_1`*Demodata for Social network Graph*

Description

A dataset to show a bigger sociogramm

Usage

```
data(data_Network_1)
```

Format

A data frame with 800 observations on the following 16 variables.

`Name` a numeric vector

`Beschreibung` a character vector

`item.number` a numeric vector

`dominance.order` a character vector

`age` a character vector

`sex` a character vector

`action.from.` a numeric vector

`action.to` a numeric vector

`kind.of.action` a numeric vector

`time` a POSIXct

`test.2.kind.of.action` a numeric vector

`test.3.kind.of.action` a numeric vector

`name.of.action` a character vector

`action.number` a numeric vector

`classification` a numeric vector

`weighting` a numeric vector

Examples

```
data(data_Network_1)
```

`data_Network_2`*Demodata for Social network Graph*

Description

A dataset to show a bigger sociogramm

Usage

```
data(data_Network_2)
```

Format

A data frame with 800 observations on the following 16 variables.

Name a numeric vector

Beschreibung a character vector

item.number a numeric vector

dominance.order a character vector

age a character vector

sex a character vector

action.from. a numeric vector

action.to a numeric vector

kind.of.action a numeric vector

time a POSIXct

test.2.kind.of.action a numeric vector

test.3.kind.of.action a numeric vector

name.of.action a character vector

action.number a numeric vector

classification a numeric vector

weighting a numeric vector

Examples

```
data(data_Network_2)
```

detect_bits *for internal use only*

Description

for internal use only

Usage

```
detect_bits(bits, set = TRUE)
```

Arguments

bits

set if set = TRUE returns all true bits if set = false returns all false bits

Author(s)

Knut krueger

Examples

```
print('for internal use only')
```

Musicnotation *Music Notation Graph*

Description

computes Music Notation graphs

Usage

```
Musicnotation(data_sheet, ...)
```


Arguments

`data_sheet` either a data.frame f.e imported from a data sheet containing
 "Name", "item.number"
 "action.from.", "action.to", "kind.of.action"
 "name.of.action", "action.number", "classification", "weighting"
 or only "action.from.", "action.to", "kind.of.action" if exists actions and items
 actions: with "name.of.action", "action.number", "classification", "weighting"
 items with "Name", "item.number"
 ... colors: a factor of colors as much as actions
 lwd: line width if lwd_arrows is not used also for line width arrows
 show_items: items to be shown -
 angel_arrows: The angel aof the arrow head default 20
 length_arrows: the lenght of the arrow default 0.05
 lwd_arrows: the line width of the arrows default 1
 actions_colors: a vector of colors for actions f.e to show one special action
 starting_time:
 ending_time: builds the graph with data bewteen starting and ending time
 sort_dominace: sort the graph by ADI if sort_dominance is present
 user_colors: a vector of colors as much as items to show differetn colors for
 items
 color_bits: a vector of colors as much as items 1 shows the horse colored 0 in
 black (defined with actions_colors)

Value

returns the ADI

Author(s)

Knut Krueger

References

Chase, I. D. (2006). Music notation: a new method for visualizing social interaction in animals and humans. *Front Zool*, 3, 18.

<http://dx.doi.org/10.1186%2F1742-9994-3-18>

Examples

```
## you can eihter use:
dataM=data.frame ("action.from"=c(1,2,3,4,5,1,1,1,1,1,1,1,1,3,4),
  "action.to"= c(2,3,4,5,6,2,3,4,5,6,3,4,3,4,3),
  "kind.of.action"= c(4,1,1,4,3,4,3,4,3,4,3,4,3,4,3),
  "Time"=c("03:15:00", "03:17:30", "03:20:00", "03:20:30", "03:21:00", "03:21:30",
    "03:22:00", "03:22:30", "03:23:00", "03:23:30", "03:25:00", "03:25:30",
```

```

"03:26:00","03:26:30","03:27:00"),stringsAsFactors=FALSE)

items= data.frame ("Name"=c("item1","item2","item3","item4","item5","item6") ,
                  "item.number"=c(1:6),stringsAsFactors=FALSE)
actions=data.frame("name.of.action"= c("leading","following","approach","bite","threat to bite",
                                       "kick","threat to kick", "chase","retreat"),
                  "action.number"=c(1:9),
                  "classification"=c(1,2,1,1,1,1,1,1,2) ,
                  "weighting"=c(1,-1,1,1,1,1,1,1,-1),stringsAsFactors=FALSE)
## all encounters without leading and following
bytes= "001111111"
## set colors for special encounters
color= c("green","green","red","red","red","red","red","red")

Musicnotation(data_sheet=dataM,actions=actions,items=items,sort_dominance=TRUE)
## or you can use a complete f.e Excel sheet
## you can save this data as basic excel sheet to work with
data(data_Musicnotation)
Musicnotation(data_sheet=data_Musicnotation,sort_dominance=TRUE)

```

search.win.lose

for internal use only

Description

counts the wins and loses

Usage

```
search.win.lose(data_sheet, ...)
```

Arguments

data_sheet

...

Author(s)

Knut Krueger

Examples

```
print('for internal use only')
```

 Sociogram

Social Network Graphs

Description

computes social network graphs with igraph

Usage

```
Sociogram(data_sheet, bits, ...)
```

Arguments

data_sheet	either a data.frame f.e imported from a data sheet containing "Name","item.number" "action.from.,"action.to","kind.of.action" "name.of.action","action.number","classification","weighting" or only "action.from.,"action.to","kind.of.action"if exists actions and items data_sheet: with "action.from.,"action.to","kind.of.action" items with "Name","item.number"
bits	as sting where each enabled action is set to 1 and each disabled action is set to 0
...	Postscript: FALSE (default) or path to PS output file soziogram_layout: layout.auto,layout.random,layout.circle,layout.sphere,layout.fruchterman.reingold,lay curved: how much the lines between the nodes ar curved 0 ist stright, default is 0.2 scal_value: the multiplier of the nodes, default: 1/3 linesize_add: value to add to the linesize (helpful for a graph with thin lines. default 0 log: log2 size of linewidth, default= false canvas.width: default 1000 canvas.height: default 800 tkplot: interactiv tkplot, default = true

Value

sociogram	the igraph object
counts_circles	
count_interactions	the count of cirles
line_size	the count of interactions
counts_circles	the used linesize
	vector of min and max line size

the last for are helpful to change circle size and linewidth

Author(s)

Knut Krueger

Examples

```

## you can either use:
data_sheet=data.frame ("action.from"=c(1,4,2,3,4,3,4,3,4,3,4,3,4,3,4),
                        "action.to"=c(4,1,1,4,3,4,3,4,3,4,3,4,3,4,3),
                        "kind.of.action"= c(4,1,1,4,3,4,3,4,3,4,3,4,3,4,3),stringsAsFactors=FALSE)
items= data.frame ("Name"=c("item1","item2","item3","item4","item5","item6") ,
                  "item.number"=c(1:6),stringsAsFactors=FALSE)
actions=data.frame("name.of.action"= c("leading","following","approach","bite","threat to bite",
                                       "kick","threat to kick", "chase","retreat"),
                  "action.number"=c(1:9),
                  "classification"=c(1,2,1,1,1,1,1,1,2) ,
                  "weighting"=c(1,-1,1,1,1,1,1,1,-1),stringsAsFactors=FALSE)
## all encounters without leading and following
bytes= "001111111"
Sociogram(data_sheet,items=items,actions=actions,bytes)
## mor you can use a complete f.e Excel sheet
## you can save this data as basic excel sheet to work with
data(data_Network_1)
## set 1 for action you want to show
bytes= "00111111111000000000"
Sociogram(data_Network_1,bytes)

```

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