

Package ‘Dominance’

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Title ADI (Average Dominance Index), Social Network Graphs with Dual Directions, and Music Notation Graph

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Depends R (>= 3.1.0)

Imports igraph,chron,gdata,XLConnect

Suggests

Description Can calculate ADI (Average Dominance Index), FDI (Frequency based 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://equine-behaviour.de/de/R-%20Package_Dominance

BugReports see maintainer

NeedsCompilation no

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Dominance-package	<i>Dominance Calculation and Graphs in Animals</i>
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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

[ADI](#)

[Sociogram](#)

[Musicnotation](#)

Author(s)

Knut Krueger , Konstanze Krueger

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

ADI	<i>Average Dominance Index</i>
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Description

computes the Average Dominance Index

Usage

ADI(data_sheet, bytes, ...)

Arguments

data_sheet	<p>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"</p> <p>or only "action.from.", "action.to", "kind.of.action" if exists actions and items</p> <p>actions: with "name.of.action", "action.number", "classification", "weighting" items with "Name", "item.number"</p>
bytes	a string where each enabled action is set to 1 and each disabled action is set to 0
...	<p>dots : actions with "name.of.action", "action.number", "classification", "weighting"</p> <p>Classification 1 if "action.from" wins; Classification 2 if "action.to" wins</p> <p>Weighting the factor which should be used to calculate the behavior (1 for "action.from" wins -1 for "action.to" wins)</p> <p>Setting a behaviour to 2 means it is count double</p> <p>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</p> <p>workbook : the XIConnect Workbook for the Excel file to be changed note: The workbook must be opened before</p> <p>sheet: the sheet name (ADI will be added to be sure not to delete any data</p> <p>savecounts: save also the counts of actions as sheet (availalbe only with work-book</p>

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. Gygax, 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(1,4,2,3,4,3,4,3,4,3,4,3,4,3,4,3,4),
                       "action.to"=c(4,1,1,4,3,4,3,4,3,4,3,4,3,4,3,4,3),
                       "kind.of.action"= c(4,1,1,4,3,4,3,4,3,4,3,4,3,4,3,4,3),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"
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= "001111111"
ADI(data_ADI,bytes)
```

change.action.without.response

changes kind of actions for all action without response

Description

changes kind of actions for all action without response

Usage

```
change.action.without.response(data.set,action,response,newaction, ...)
```

Arguments

data.set	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"
action	action normally with response
response	the normal response to the action
newaction	data.frame("name.of.action"="test","action.number"=1,"classification"=2,"weighting"=3)')
...	workbook : the XIConnect Workbook for the Excel file to be changed note: The workbook must be opened before sheet: the sheet name (some random numbers will be added to be sure not to delete any data

Value

change.action.without.response returns the new data.set

Author(s)

Knut Krueger

Examples

```
data(data_ADI)
new_data=change.action.without.response(data_ADI,3,9,
    newaction=data.frame("name.of.action"="test",
        "action.number"=10,"classification"=2,"weighting"=3))
new_data
```

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	<i>Demodata for Social network Graph</i>
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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')
```

FDI *!!!! ADI Manual TODO Change it to FDI*

Description

computes the Average Dominance Index

Usage

```
FDI(data_sheet, bytes, ...)
```

Arguments

data_sheet	<p>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"</p> <p>or only "action.from. ","action.to","kind.of.action"if exists actions and items</p> <p>actions: with "name.of.action","action.number","classification","weighting" items with "Name","item.number"</p>
bytes	a string where each enabled action is set to 1 and each disabled action is set to 0
...	<p>dots : actions with "name.of.action","action.number","classification","weighting"</p> <p>Classification 1 if "action.from"" wins; Classification 2 if "action.to" wins</p> <p>Weighting the factor which should be used to calculate the behavior (1 for "action.from"" wins -1 for "action.to" wins")</p> <p>Setting a behaviour to 2 means it is count double</p> <p>vcolors as much colors as items, colors will returned as sorted FDI colors means color 1 = item rank 1, color 2 = item rank 2, and so on</p> <p>workbook : the XIConnect Workbook for the Excel file to be changed note: The workbook must be opened before</p> <p>sheet: the sheet name (FDI will be added to be sure not to delete any data</p> <p>savecounts: save also the counts of actions as sheet (availalbe only with work- book</p>

Value

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

Author(s)

Knut Krueger, Prof. Dr. Konstanze Krueger

References

TODO

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("leFDIng","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 leFDIng and following
bytes= "001111111"
FDI(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= "001111111"
FDI(data_ADI,bytes)
```

 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(1,2,3,4,5,1,1,1,1,1,1,1,3,4),
                  "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, ...)
```



```
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"
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= "0011111111110000000000"
Sociogram(data_Network_1,bytes)
```

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