

Package ‘nVennR’

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Type Package

Title Create n-Dimensional, Quasi-Proportional Venn Diagrams

Version 0.2.1

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Description Provides an interface for the nVenn algorithm (Perez-Silva et al. 2018) <DOI:10.1093/bioinformatics/bty109>. This algorithm works for any number of sets, and usually yields pleasing and informative Venn diagrams with proportionality information. However, representing more than six sets takes a long time and is hard to interpret, unless many of the regions are empty. If you cannot make sense of the result, you may want to consider 'UpSetR' <<https://cran.r-project.org/package=UpSetR/README.html>>.

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Encoding UTF-8

LazyData true

RoxygenNote 6.0.1

Depends R (>= 2.10)

LinkingTo Rcpp

Imports Rcpp

Suggests knitr, rmarkdown, rsvg, grImport2

VignetteBuilder knitr

NeedsCompilation yes

Repository CRAN

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createVennObj	<i>Create nVennObj from scratch</i>
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Description

Create nVennObj from scratch

Usage

```
createVennObj(nSets = 1, sNames = NULL, sSizes = NULL)
```

Arguments

nSets	Number of sets.
sNames	List of names.
sSizes	List of sizes for all the regions (from '0' to '2**nSets - 1'). To understand the order of the regions, one can think of a region as a binary number. Each bit tells whether the region belongs (1) or not (0) to a given set. For instance, with 4 sets we have 4 bits. The number 7 with 4 bits is 0111, which describes a region belonging to sets 2, 3, and 4 and not to set 1. To pass the values of the regions, those values are sorted according to the number describing the region. Thus, with four sets, the first element corresponds to region 0 (0000), the second to region 1 (0001), the third to region 2 (0010), ... The last corresponds to region 15 (1111), which belongs to all the sets.

Value

nVennObj with set information. To plot, it must be sent to 'toVenn'. Sending it to 'showSVG' will render the diagram before simulation.

exampledf	<i>Example data frame.</i>
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Description

A dataset containing programming preferences from 18 employees. This data set was provided by user Krantz to inquire about nVennR

Usage

```
exampledf
```

Format

A data frame with 18 rows and 3 variables:

Employee Employee ID

SAS Employee uses SAS

Python Employee uses Python

R Employee uses R

Source

<https://stackoverflow.com/questions/49471565/transforming-data-to-create-generalized-quasi-proport>

getVennRegion	<i>Get elements in a region</i>
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Description

Get elements in a region

Usage

```
getVennRegion(nVennObj, region)
```

Arguments

nVennObj Object describing an nVenn job.

region Description of the region. This can be a vector with the names of the groups the region belongs to or a vector describing whether the region belongs to each set in order (i. e., c(1, 0, 0) means the region belongs to set 1 and does not belong to sets 2 and 3).

Value

list of the elements belonging to the specified region

listVennRegions	<i>List elements in every region</i>
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Description

List elements in every region

Usage

```
listVennRegions(nVennObj, na.rm = T)
```

Arguments

nVennObj	Object to list.
na.rm	If true, empty regions are not listed.

plotVenn	<i>Create Venn diagram using the nVenn algorithm.</i>
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Description

This algorithm is based on a simulation that compacts the figure. If the resulting diagram is not compact enough, the simulation can be tweaked in two ways: changing the number of simulation cycles ('nCycles') and executing this function repeatedly.

Usage

```
plotVenn(sets, nVennObj = NULL, nCycles = 7000, sNames = NULL,
  showPlot = T, ...)
```

Arguments

sets	List of lists with the input sets.
nVennObj	Object returned from previous run. If provided, the function will improve the diagram by running more cycles on the previous result. If nVennObj is provided, do not feed additional input lists, as they will be ignored
nCycles	Number of cycles for the simulation. For up to 4 sets, the default number of 7000 should be enough. Even for more complex scenarios, it may be better to run the function repeatedly, as a large number of cycles may take up too many resources.
sNames	List of set names, in the same order as the input lists. If the input has tables or data frames and the name exists, it will select the corresponding column.
showPlot	Show the result in the graphic device.
...	Options for 'showSVG' If input lists have names, those names will be used for the legend. If not, names can be provided with sNames.

Value

nVennObj with the result of the simulation. As a side effect, The result can be drawn in the graphical device.

Examples

```
set1 <- list(set1 = c('a', 'b', 'c'))
set2 <- list(set2 = c('e', 'f', 'c'))
set3 <- list(set3 = c('c', 'b', 'e'))
myNV <- plotVenn(list(set1, set2, set3), sNames=c("One", "Two", "Three"))
showSVG(myNV, opacity=0.2)
```

setVennRegion	<i>Set number of elements in a region</i>
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Description

Set number of elements in a region

Usage

```
setVennRegion(nVennObj, region, value)
```

Arguments

nVennObj	Object describing an nVenn job.
region	Description of the region. This can be a vector with the names of the groups the region belongs to or a vector describing whether the region belongs to each set in order (i. e., c(1, 0, 0) means the region belongs to set 1 and does not belong to sets 2 and 3).
value	Size of the region.

Value

Modified nVennObj

showSVG *Show Venn diagram. Automatically called from plotVenn.*

Description

Show Venn diagram. Automatically called from plotVenn.

Usage

```
showSVG(nVennObj, opacity = 0.4, borderWidth = 1, outFile = "",  
        systemShow = FALSE, labelRegions = T, showNumbers = T,  
        setColors = NULL, fontScale = 1)
```

Arguments

nVennObj	Object with nVennR information. Can be obtained from a plotVenn call.
opacity	Fill opacity for the sets. Defaults to 0.4.
borderWidth	Width of set borders. Defaults to 1.
outFile	File name to save SVG figure. If empty, a temp file will be created and sent to the graphic device.
systemShow	Show the result in the system SVG viewer (i. e., Inkscape).
labelRegions	Show region identifiers. These are numbers in parentheses inside each region indicating which sets that region belongs to. Defaults to true
showNumbers	Show how many elements belong to each region (large numbers in the figure). Defaults to true
setColors	Vector with the color of each set in order. Color names must be CSS-compatible.
fontScale	Multiplier for font sizes. The font size of both numbers and region labels will be multiplied by this factor. Values larger than 2 will probably make labels clash.

Value

Nothing. Creates a Venn diagram in svg as a side effect.

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