Package 'VennDetail'

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Type Package

Title A package for visualization and extract details

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Description A set of functions to generate high-resolution Venn,Vennpie plot,extract and combine details of these subsets with user datasets in data frame is available.

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Encoding UTF-8

LazyData True

Imports utils, grDevices, stats, methods, dplyr, purrr, tibble, magrittr, ggplot2, UpSetR, VennDiagram, grid, futile.logger

Suggests knitr, rmarkdown, testthat, markdown

VignetteBuilder knitr

URL https://github.com/guokai8/VennDetail

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Contents

`.add_colnames` *Give first colname as RowNxyz*

Description

Give first colname as RowNxyz

Usage

```
.add_colnames(x)
```

Arguments

x	data frame

Value

return data frame with the first colnames change to "RowNxyz"

`.make.table` *make table for venndetail modified from make.truth.table (VennDiagram)*

Description

make table for venndetail modified from make.truth.table (VennDiagram)

Usage

```
.make.table(x)
```

Arguments

x	A list with input groups

Value

A data frame with logical vector columns and 2 ^ length(x)-1 rows.

Author(s)

Kai Guo

`detail` *Detail function provides a way to display the amount of members in each group*

Description

The objective of this function is to summarizes the overlaps across groups identified by venndetail without creating diagram.

Usage

```
detail(object)

## S4 method for signature 'Venn'
detail(object)
```

Arguments

`object`	Venn object

Value

Numeric vector with set names and amounts for each set

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
detail(res)
```

dplot — *Dplot function allows users to visualize the detail function in the form of a barplot*

Description

The amount of members within each group determined by venndetail will be displayed as a bar plot. This will include all groups such as shared, pairwise, and unique. The order of the figure can be adjusted by the users by using the order argument.The text size argument will allow users to change the size of the numbers above the bars indicating the total number of members within each group.

Usage

```
dplot(object, order = FALSE, textsize = 5)

## S4 method for signature 'Venn'
dplot(object, order = FALSE, textsize = 5)
```

Arguments

object	Venn object
order	Boolean indicating whether to sort the bar (default: FALSE).
textsize	Numeric vector giving the text size above the bar.

Value

Produces a bar plot displaying the total counts within each group

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
dplot(res, order = TRUE, textsize = 3)
```

getFeature — *getFeature provides a way to combine list of user supplied data frames with Venn object*

Description

GetFeature allows users to extract subsets from venn object into a table format along with accompanying information from the data frames provided in the rlist argument

Usage

```
getFeature(object, subset, rlist, userowname = TRUE, gind = NULL,
  sep = "_", wide = FALSE)

## S4 method for signature 'Venn'
getFeature(object, subset, rlist, userowname = TRUE,
  gind = NULL, sep = "_", wide = FALSE)
```

Arguments

object	Venn object
subset	Character vector giving the names of the user-defined subset to extract
rlist	List of user-supplied data frames to combine with venndetail result
userowname	Boolean indicating whether to use row names to join data frames or not (default: TRUE)
gind	Column name or index of each user-supplied data.frame to use to join data frames(valid only when userowname=FALSE)
sep	Character string used to separate the terms when concatenating group names into new separation character for new column names in the resulting data frame
wide	Boolean indicating whether to use wide format(default:FALSE)

Value

data.frame with subsets information and details from the user supplied data frame

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
dA <- data.frame(A = A, "FC" = rnorm(40))
dB <- data.frame(B = B, "FC" = rnorm(60))
dC <- data.frame(C = C, "FC" = rnorm(40))
res <- venndetail(list(A = A, B = B, C = C))
rhs <- getFeature(res, subset = "Shared", rlist = list(dA, dB, dC),
   userowname= FALSE, gind = rep(1, 3))
```

---

getSet *getSet function provides a way to extract subsets*

Description

getSet function provides a way to extract subsets from venndetail object

Usage

```
getSet(object, subset = NULL, min = 0, wide = FALSE)

## S4 method for signature 'Venn'
getSet(object, subset = NULL, min = 0, wide = FALSE)
```

Arguments

object	Venn object
subset	Character vector giving the subset names
min	The minimum number of input groups that a subset must belong to e.g. min = 2 will only report those subsets with elements shared by 2 or more input groups.
wide	Boolean indicating return wide format (default: FALSE).

Value

Specific subset information

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
getSet(res, "A")
```

---

make.subset *Get subset from list of input groups*

Description

Get subset from list of input groups

Usage

```
make.subset(x, sep = "_")
```

Arguments

x	A list with input groups
sep	symbol character used when concatenating group names into subset names

Value

A list of subsets. The names on the list are the subset names and the list elements are the subset details.

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
x <- list(A = A, B = B, C = C)
out <-  make.subset(x)
```

---

merge.Venn *Merge two or more venndetail obejcts*

Description

Merge will combine multiple venn diagrams to allow comparison between multiple groups

Usage

```
## S3 method for class 'Venn'
merge(x, y, ignore.case = FALSE, useupper = TRUE,
  plot = FALSE, ...)
```

Arguments

x	Venn object
y	Venn object
ignore.case	Boolean indicating whether to ignore case of group names (default: FALSE)
useupper	Boolean indicating whether to use uppercases for group names (default: TRUE)
plot	Boolean indicating whether to plot figure or not (default: FALSE)
...	arguments for venndetail

Value

venn object

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res1 <- venndetail(list(A = A, B = B))
res2 <- venndetail(list(A = A, C = C))
res <- merge(res1, res2)
```

plot.Venn *Plot Venn object*

Description

The plot function allows users to graphically display the groups and overlap between groups in their venn class object through a variety of graph types such as a bar plot, traditional venn, or venn pie chart.

Usage

```
## S3 method for class 'Venn'
plot(x, type = "venn", col = "black", sep = "_",
  mycol = c("dodgerblue", "goldenrod1", "darkorange1", "seagreen3",
  "orchid3"), cat.cex = 1.5, alpha = 0.5, cex = 2,
  cat.fontface = "bold", margin = 0.05, text.scale = c(1.5, 1.5, 1.5,
  1.5, 1.5, 1.5), filename = NULL, piecolor = NULL,
  revcolor = "lightgrey", any = NULL, show.number = TRUE,
  show.x = TRUE, log = FALSE, base = NULL, percentage = FALSE,
  sets.x.label = "Set Size", mainbar.y.label = "Intersection Size",
  nintersects = 40, abbr = FALSE, abbr.method = "both.sides",
  minlength = 3, ...)
```

Arguments

x	Venn object
type	Use venn, vennpie or upset (default: venn)
col	Character vector giving the color of the circles.
sep	Character string used to separate the terms when concatenating group names into new column names (colnames)(vennpie).
mycol	Character vector giving the filled color for VennDiagram circles.
cat.cex	Numeric vector giving the size of the category names.
alpha	A number giving the transparency value.
cex	A numerical value giving the text size for venndiagram
cat.fontface	A character giving the fontface (font style) for category name.
margin	Number giving the amount of whitespace around the diagram in grid units
text.scale	Numeric vector of text sizes for upset diagram (ylab, yaxis, xlab, subset name, xaxis, insection).
filename	Filename for output figure.
piecolor	Character vector giving the colors of the subsets(vennpie).
revcolor	Character giving the color for the non-selected subsets(vennpie).
any	Number to indicate selected subsets, such as 1 means any unique subsets, 2 means any subsets shared by two groups(vennpie).
show.number	Boolean indicating whether to display the element numbers of the subsets or not (default: TRUE)(vennpie).

show.x	Boolean indicating whether to show subset labels outside the circle (default: TRUE)(vennpie).
log	Boolean indicating whether to transform the data in log scale(vennpie).
base	Base value for log transformation(vennpie).
percentage	Boolean indicating whether to display subset percentages (default: FALSE)(vennpie).
sets.x.label	x-axis label (upset)
mainbar.y.label	y-axis label (upset)
nintersects	Number of intersections to plot. If subset to NA, all intersections will be plotted.
abbr	Boolean indicating whether to abbreviate subset names (default: FALSE).
abbr.method	a character string specifying the method used. Partial matches allowed. (default: both side).
minlength	Minmal length for the subset name.
...	further arguments passed to or from other methods

Value

different type of graphics based on user chose

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
plot(res, type = "venn")
```

---

result *Extract the result from venn object*

Description

Result will return output in a table format including the contents of the subsets included in the venndetail object

Usage

```
result(object, wide = FALSE)

## S4 method for signature 'Venn'
result(object, wide = FALSE)
```

Arguments

object	Venn object
wide	Boolean indicating whether to return wide format(default:FALSE)

Value

return dataframe and print header of dataframe

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
result <- result(res)
```

---

rowjoin *Join data.frame based on rownames*

Description

join two dataframes by rownames

Usage

```
rowjoin(x, y, fun = "fun_join")

## S4 method for signature 'data.frame,data.frame'
rowjoin(x, y, fun = "full_join")
```

Arguments

x	data.frame x
y	data.frame y
fun	Different join format: left_join, full_join, right_join (default:full_join)

Value

dataframe with join results

Author(s)

Kai Guo

Examples

```
library(dplyr)
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
dA <- data.frame(A = A, "FC" = rnorm(40))
dB <- data.frame(B = B, "FC" = rnorm(60))
rownames(dA) <- A
rownames(dB) <- B
rowjoin(dA, dB)
```

setcolor *return colors with given a vector*

Description

Setcolor will provide a list of color vectors based on the number used as an input.

Usage

```
setcolor(x)
```

Arguments

x	Number of color

Value

color vector

Author(s)

Kai Guo

Examples

```
mycol <- setcolor(10)
mycol
```

show Venn *Show the summary of venn object*

Description

This function provides a summary of the venn object, including a full results and subsets as well as an summary information.

Usage

```
## S4 method for signature 'Venn'
show(object)
```

Arguments

object	venn object

Value

summary information for the venn object

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
show(res)
```

---

summary.Venn *Give summary information of Venn object*

Description

print the summary information of Venn object

Usage

```
## S3 method for class 'Venn'
summary(object, ...)
```

Arguments

object	Venn object
...	other arguments ignored (for compatibility with generic)

Value

summary information

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
summary(res)
```

T2DM *T2DM*

Description

T2DM data are differential expression genes (DEGs) with annotation from the publication by Hinder et al. The data contains three DEG sets from three different tissues (Cortex,SCN,Glom). DEGs were determined by using Cuffdiff with a false discovery rate (FDR) < 0.05 between groups with or without pioglitazone treatment.

Usage

```
T2DM
```

Format

A list of data frame with five columns individually:

Entrez Entrez gene IDs

Symbol HGNC symbols

Annotation Gene function

log2FC log2 Fold Change

FDR False Discovery Rate

Examples

```
T2DM
```

Venn-class *Class 'Venn' This class includes all information from venndetail*

Description

Class 'Venn' This class includes all information from venndetail

Slots

`input` orginal input datasets

`raw` summary of the input datasets

`sep` separation character

`GroupNames` input group names

`result` shared or unique sets

`detail` shared of unique number belongs to each sets

`wide` result in wide format

Author(s)

Kai Guo

venndetail *Extract shared and unique subsets*

Description

Extracts shared and unique elements from groups provided to the function.This base function will create a formal class venn object and can also graphically plot the amount of objects in each group. The plot will be in the form of a traditional venn diagram as default.And users can also use vennpie or upset methods to display the result.

Usage

```
venndetail(x, sep = "_", abbr = FALSE, minlength = 3,
  abbr.method = "both side")
```

Arguments

x	A list of variables with group names.
sep	symbol character used when concatenating group names into subset names (default: '_').
abbr	Boolean indicating whether to abbreviate subset names (default: FALSE).
minlength	Minmal length for the subset name.
abbr.method	a character string specifying the method used. Partial matches allowed. (default: both side).

Details

Extract shared and unique subsets

Value

venn object and figures

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
```

vennpie *Pie plot shows shared and unique sets*

Description

Vennpie uses the venn object and to creates a figure in the form of a venn pie diagram rather than a traditional venn diagram. Users can highlight a specific sections of the venn pie.

Usage

```
vennpie(object, subset = NULL, top = 31, min = 0, color = NULL,
  revcolor = "lightgrey", any = NULL, show.number = TRUE,
  show.x = TRUE, sep = "_", log = FALSE, base = NULL,
  percentage = FALSE)

## S4 method for signature 'Venn'
vennpie(object, subset = NULL, top = 31, min = 0,
  color = NULL, revcolor = "lightgrey", any = NULL,
  show.number = TRUE, show.x = TRUE, sep = "_", log = FALSE,
  base = NULL, percentage = FALSE)
```

Arguments

object	Venn object
subset	Character vector giving the subset users want to highlight.
top	number of subsets with largest to display (default: 31)
min	The minimum number of input groups that a subset must belong to e.g. min = 2 will only report those subsets with elements shared by 2 or more input groups.
color	Character vector giving the colors of the subsets.
revcolor	Character giving the color for the non-selected subsets.
any	Number to indicate selected subsets, such as 1 means any unique subsets, 2 means any subsets shared by two groups.
show.number	Boolean indicating whether to display the element numbers of the subsets or not (default: TRUE).
show.x	Boolean indicating whether to show subset labels outside the circle (default: TRUE).
sep	Character string used to separate the terms when concatenating group names into new column names (colnames).
log	Boolean indicating whether to transform the data in log scale .
base	Base value for log transformation.
percentage	Boolean indicating whether to display subset percentages (default: FALSE).

Value

vennpie figure

Author(s)

Kai Guo

Examples

```
A <- sample(1:100, 40, replace = FALSE)
B <- sample(1:100, 60, replace = FALSE)
C <- sample(1:100, 40, replace = FALSE)
res <- venndetail(list(A = A, B = B, C = C))
vennpie(res)
```

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