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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| .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"
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 $2^\text{length}(x)$-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

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>Venn object</td>
</tr>
<tr>
<td>order</td>
<td>Boolean indicating whether to sort the bar (default: FALSE).</td>
</tr>
<tr>
<td>textsize</td>
<td>Numeric vector giving the text size above the bar.</td>
</tr>
</tbody>
</table>

Value

Produces a bar plot displaying the total counts within each group

Author(s)
Kai Guo
getFeature

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

**Description**  
Get subset from list of input groups

**Usage**  
```r
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**  
```r
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 venn.detail objects*

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

**Usage**  
```r
## 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", "darkorangel"), "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, ...)
```
```r
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, intersection).
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  Minimal 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 <- result(res)

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**

```r
setcolor(x)
```

**Arguments**

- `x`: Number of color

**Value**

color vector

**Author(s)**

Kai Guo

**Examples**

```r
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**

```r
## 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)
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
venndetail

**Author(s)**

Kai Guo

---

### 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

```r
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`: Minimal 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

```r
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**

```r
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)
```

```r
## 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**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>Venn object</td>
</tr>
<tr>
<td>subset</td>
<td>Character vector giving the subset users want to highlight.</td>
</tr>
<tr>
<td>top</td>
<td>number of subsets with largest to display (default: 31)</td>
</tr>
<tr>
<td>min</td>
<td>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.</td>
</tr>
<tr>
<td>color</td>
<td>Character vector giving the colors of the subsets.</td>
</tr>
<tr>
<td>revcolor</td>
<td>Character giving the color for the non-selected subsets.</td>
</tr>
<tr>
<td>any</td>
<td>Number to indicate selected subsets, such as 1 means any unique subsets, 2 means any subsets shared by two groups.</td>
</tr>
<tr>
<td>show.number</td>
<td>Boolean indicating whether to display the element numbers of the subsets or not (default: TRUE).</td>
</tr>
<tr>
<td>show.x</td>
<td>Boolean indicating whether to show subset labels outside the circle (default: TRUE).</td>
</tr>
<tr>
<td>sep</td>
<td>Character string used to separate the terms when concatenating group names into new column names (colnames).</td>
</tr>
<tr>
<td>log</td>
<td>Boolean indicating whether to transform the data in log scale .</td>
</tr>
<tr>
<td>base</td>
<td>Base value for log transformation.</td>
</tr>
<tr>
<td>percentage</td>
<td>Boolean indicating whether to display subset percentages (default: FALSE).</td>
</tr>
</tbody>
</table>
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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