# Package ‘VennDetail’

March 14, 2024

<table>
<thead>
<tr>
<th>Type</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>A package for visualization and extract details</td>
</tr>
<tr>
<td>Version</td>
<td>1.18.0</td>
</tr>
<tr>
<td>Author</td>
<td>Kai Guo, Brett McGregor</td>
</tr>
<tr>
<td>Maintainer</td>
<td>Kai Guo <a href="mailto:guokai8@gmail.com">guokai8@gmail.com</a></td>
</tr>
<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td>License</td>
<td>GPL-2</td>
</tr>
<tr>
<td>Encoding</td>
<td>UTF-8</td>
</tr>
<tr>
<td>LazyData</td>
<td>True</td>
</tr>
<tr>
<td>Imports</td>
<td>utils, grDevices, stats, methods, dplyr, purrr, tibble, magrittr, ggplot2, UpSetR, VennDiagram, grid, futile.logger</td>
</tr>
<tr>
<td>Depends</td>
<td></td>
</tr>
<tr>
<td>LinkingTo</td>
<td></td>
</tr>
<tr>
<td>Suggests</td>
<td>knitr, rmarkdown, testthat, markdown</td>
</tr>
<tr>
<td>VignetteBuilder</td>
<td>knitr</td>
</tr>
<tr>
<td>URL</td>
<td><a href="https://github.com/guokai8/VennDetail">https://github.com/guokai8/VennDetail</a></td>
</tr>
<tr>
<td>RoxygenNote</td>
<td>6.1.1</td>
</tr>
<tr>
<td>biocViews</td>
<td>DataRepresentation, GraphAndNetwork</td>
</tr>
<tr>
<td>NeedsCompilation</td>
<td>no</td>
</tr>
<tr>
<td>git_url</td>
<td><a href="https://git.bioconductor.org/packages/VennDetail">https://git.bioconductor.org/packages/VennDetail</a></td>
</tr>
<tr>
<td>git_branch</td>
<td>RELEASE_3_18</td>
</tr>
<tr>
<td>git_last_commit</td>
<td>3b6133f</td>
</tr>
<tr>
<td>git_last_commit_date</td>
<td>2023-10-24</td>
</tr>
<tr>
<td>Repository</td>
<td>Bioconductor 3.18</td>
</tr>
<tr>
<td>Date/Publication</td>
<td>2024-03-13</td>
</tr>
</tbody>
</table>
R topics documented:

.add_colnames .................................................. 2
.make.table ......................................................... 3
detail ................................................................. 3
dplot ................................................................. 4
getFeature ............................................................ 5
getSet ................................................................. 6
make.subset ........................................................... 7
merge.Venn ............................................................ 7
plot.Venn ............................................................. 8
result ................................................................. 10
rowjoin ............................................................... 11
setcolor .............................................................. 12
show Venn ............................................................ 12
summary.Venn ....................................................... 13
T2DM ................................................................. 14
Venn-class ............................................................ 14
venndetail .............................................................. 15
vennpie ............................................................... 16

Index ................................................................. 18

.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

```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))
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

```r
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 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

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

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

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)
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 from venndetail object

### Description

getSet function provides a way to extract subsets from venndetail object

### Usage

```r
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

```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))
getSet(res, "A")
```
**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)
use.upper  Boolean indicating whether to use uppcases for group names (default: TRUE)
plot  Boolean indicating whether to plot figure or not (default: FALSE)
...  arguments for venn.detail

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 <- venn.detail(list(A = A, B = B))
res2 <- venn.detail(list(A = A, C = C))
res <- merge(res1, res2)

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, ...)

plot.Venn  Plot Venn object
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(vennpi).
- **base**: Base value for log transformation(vennpi).
- **percentage**: Boolean indicating whether to display subset percentages (default: FALSE)(vennpi).
- **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

```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))
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

```r
result(object, wide = FALSE)
```

## S4 method for signature 'Venn'

```r
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

```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))
result <- result(res)
```
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**

```r
mycol <- setcolor(10)
mycol
difflist <- setcolor(15)
difflist
```

---

**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)

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 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
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**: 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

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).
vennpie

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)
Index

* classes
  Venn-class, 14
* datasets
  T2DM, 14
  .add_colnames, 2
  .make.table, 3
detail, 3
detail,Venn-method (detail), 3
dplot, 4
dplot,Venn-method (dplot), 4
getFeature, 5
getFeature Venn (getFeature), 5
getFeature,Venn-method (getFeature), 5
getSet, 6
getSet,Venn-method (getSet), 6
make.subset, 7
merge.Venn, 7
plot.Venn, 8
result, 10
result,Venn-method (result), 10
rowjoin, 11
rowjoin,data.frame,data.frame-method
  (rowjoin), 11
setcolor, 12
show Venn, 12
show,Venn-method (show Venn), 12
summary .Venn, 13
T2DM, 14
Venn-class, 14
venndetail, 15
vennpie, 16
vennpie,Venn-method (vennpie), 16