Package ‘vennplot’

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Type Package

Title Venn Diagrams in 2D and 3D

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Description Calculate and plot Venn diagrams in 2D and 3D.

License GPL (>= 3)

Imports Rcpp (>= 0.12.7), stringr, rgl, stats, grDevices, graphics, utils

LinkingTo Rcpp

LazyData true

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NeedsCompilation yes

Author Zehao Xu [aut, cre], R. Wayne Oldford [aut], Martin Lysy [ctb]

Maintainer Zehao Xu <z267xu@uwaterloo.ca>

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### Description

Data on human encounters with great white sharks.

### Usage

sharks

### Format

A dataset with 65 rows and 11 columns.

- **Year**: Years encounter sharks
- **Sex**: Sex of victims
- **Age**: Age of victims
- **Time**: Encounter sharks in AM or PM
- **Australia**: Encounter in Australia
- **USA**: Encounter in the United States
- **Surfing**: Surfing incident
- **Scuba**: Scuba-diving incident
- **Fatality**: Whether or not there was a fatality
- **Injury**: Whether or not there was an injury
- **Length**: The length of great white sharks

### Source


### Examples

```r
vennplot(disjoint.combinations = sharks, vars = c("Au","USA","Fa","Ti"))
```
vennplot

Draw Venn and Euler diagram in 2D or 3D

Description

Draw Venn and Euler diagram in 2D or 3D

Usage

vennplot(disjoint.combinations = NULL, vars = NULL, Delta = 0.1,
ThreeD = FALSE, lambda = NULL, stressWay = c("sum", "combine"),
delta = 0.01, weight = NULL, expand = NULL, twoWayGenerate = FALSE,
scaleSearch = c("NelderMead", "lineSearch", "goldenSectionSearch", "BFGS",
.CG", "L-BFGS-B", "SANN", "Brent"), twoWaySearch = c("lineSearch",
"NelderMead", "goldenSectionSearch", "BFGS", "CG", "L-BFGS-B", "SANN",
"Brent"), scaleSearchTolerance = list(value = 1e-05, proportional = FALSE),
distanceTolerance = list(value = 1e-05, proportional = FALSE),
lossTolerance = list(ToleranceOfLoss = 1e-10, maximumStep = 10, ALPHAM =
0.01, ToleranceOfStepsSize = 1e-05, proportional = FALSE),
stressBound = 0.001, maximumStep = 50, planeSize = 50, lower = -Inf,
upper = Inf, control = list(), hessian = FALSE, mar = rep(1, 4),
cols = NULL, alpha = 0.3, smooth = FALSE, ...)

Arguments

disjoint.combinations

Named numeric vector or data.frame where each column should be factor. See
Details.

vars

Extract specific variables of data.frame as disjoint.combinations. If vars = NULL,
all the information of data.frame will be extracted.

Delta

The length of step for method "lineSearch" or the initial interval of test points
for method "NelderMead".

ThreeD

Draw Venn diagram in 3D. See Examples.

lambda

It can be NULL or a numeric vector. If lambda = NULL, the loss function opti-
mize lambda, else, based on the given lambda, loss function will calculate stress
respectively then return the minimum one and corresponding lambdas.

stressWay

If data set can be separated into a few groups, there will be two ways to express
stress: one is to sum up all the stress (named "sum"; default), the other is to use
total TSS divide by total RSS (named "combine").

delta

Closeness between groups.

weight

The weight of disjoint.combinations. It should have the same length with
disjoint.combinations.

expand

If some balls should not intersect and the code fails to detect it. It is possible to
be fixed manually but sacrificing stress.
twoWayGenerate  Boolean factor, if false, any missing intersections are set as zero.
scaleSearch   Provide multiple methods to optimize scale lambda. The default method is "NelderMead". See Details.
twoWaySearch  If two way intersections are missing, multiple methods are available to generate two way intersections. The default method is "lineSearch". See Details.
scaleSearchTolerance  A list with tolerance value and boolean factor "proportional". The loop of NelderMead and lineSearch in scaleSearch will end when the difference or proportional difference matches the tolerance value.
distanceTolerance  A list with tolerance value and boolean factor "proportional". The Newton method of finding distance will end when the difference or proportional difference matches the tolerance value.
lossTolerance  A list with ToleranceofLoss, maximumStep, ALPHA, ToleranceofStepsSize and boolean factor "proportional". If ALPHA is null, the step size will be searched through Newton method and it will stop when step reaches the maximum step or the difference matches ToleranceofStepsSize; else step size will be fixed with ALPHA. The loss will end when the difference or proportional difference or the total loss value matches the "ToleranceofLoss".
stressBound  The loop of method NelderMead will stop when stress is beyond the stress-bound.
maximumStep  The maximum searching step for method NelderMead and Newton method of calculating distance.
planeSize  The plane size of calculating disjoint intersections numerically.
lower  The lower bound of the interval to be searched for the "goldenSectionSearch" and "L-BFGS-B". See Details.
upper  The upper bound of the interval to be searched for the "goldenSectionSearch" and "Brent". See Details.
control  A list of control parameters. See Details.
hessian  Logical. A numerically differentiated Hessian matrix be returned or not. See Details.
mar  Plot margins.
cols  Color of balls. If NULL, rainbow color will be set.
alPHA  Color darkness.
smooth  For 3D plot, if true, the balls will be much more smoother. However, based on the high resolution, if the number of balls is too much, when rotating, the new window stumbles.
...  Any further graphical parameters to be passed to the plot function.

Details

1. One way sets must be given in disjoint.combination. e.g. disjoint.combination = c( B=2, AB=0.5) is not allowed. disjoint.combination = c(A = 0, B=2, AB=0.5) works. 2. Except "NelderMead" and "lineSearch", "goldenSectionSearch" in scaleSearch and twoWaySearch is based on optimize and the rest methods are based on optim. 3. lower, upper, control and hessian share the same parameters with optim, and lower, upper can also be used in optimize.
An object of the class `vennplot` with following components:

- `xy` centres of the balls (columns are \((x, y)\) or \((x, y, z)\) coordinates).
- `radius` radii of the balls.
- `loss` total loss of `vennplot`.
- `stress` stress value for solution.

Author(s)

Zehao Xu and Wayne Oldford

Examples

```r
# 3D Venn plot with arbitrary sets
disjoint.combinations = c(A=80, B=50, C=100, D = 100, E = 100,
ve = vennplot(disjoint.combinations, ThreeD = TRUE)

# data frame
vennplot(disjoint.combinations = sharks, vars = c("Au","USA","Fa","Sex"),
         scaleSearch = "lineSearch", expand = 1.1)
```
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