Package 'diaplt'

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Type Package

Title Beads Summary Plot of Ranges

Version 1.3.0

Date 2018-06-08

Author Shinichiro Tomizono

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Description Visualize one-factor data frame.
Beads plot consists of diamonds of each factor of each data series.
A diamond indicates average and range.
Look over a data frame with many numeric columns and a factor column.

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License_restricts_use no

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R topics documented:

diaplt-package 2
beadsplot 3

Index **9**

`diaplt-package` *Beads Summary Plot of Ranges*

Description

Visualize one-factor data frame. Beads plot consists of diamonds of each factor of each data series. A diamond indicates average and range. Look over a data frame with many numeric columns and a factor column.

Details

The DESCRIPTION file:

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Index of help topics:

```
beadsplot               Beads Summary Plot
diaplt-package          Beads Summary Plot of Ranges
```

This package contains beadsplot function.

Author(s)

Shinichiro Tomizono

Maintainer: Shinichiro Tomizono <cowares@gmail.com>

References

Beads Summary Plot of Ranges: http://tomizonor.wordpress.com/2013/11/12/beads-plot/

See Also

`beadsplot`.

Examples

```
beadsplot(Species~., iris)
```

---

beadsplot *Beads Summary Plot*

Description

Visualize one-factor data frame. Look over a data frame with many numeric columns and a factor column. Beads plot consists of diamonds of each factor of each data series. A diamond indicates average and range.

Usage

```
beadsplot(x, ...)

## Default S3 method:
beadsplot(x, index=NULL, horizontal=FALSE,
               col=NULL, sheer=NULL, shading=NA, shading.angle=NA,
               bw=0.2, lwd=1, lwd.center=lwd,
               legend=TRUE, label.factor=TRUE, label.range=TRUE,
               drift.label.factor=c(0.2,2), drift.label.range=c(0,0),
               S=min, E=mean, N=max, summary.labels=NULL,
               plot=TRUE, verbose=FALSE, ...)

## S3 method for class 'data.frame'
beadsplot(x, index=NULL, horizontal=FALSE,
               col=NULL, sheer=NULL, shading=NA, shading.angle=NA,
               bw=0.2, lwd=1, lwd.center=lwd,
               legend=TRUE, label.factor=TRUE, label.range=TRUE,
               drift.label.factor=c(0.2,2), drift.label.range=c(0,0),
               S=min, E=mean, N=max, summary.labels=NULL,
               plot=TRUE, verbose=FALSE, ...)

## S3 method for class 'numeric'
beadsplot(x, index=NULL, horizontal=FALSE,
               col=NULL, sheer=NULL, shading=NA, shading.angle=NA,
               bw=0.2, lwd=1, lwd.center=lwd,
               legend=TRUE, label.factor=TRUE, label.range=TRUE,
               drift.label.factor=c(0.2,2), drift.label.range=c(0,0),
               S=min, E=mean, N=max, summary.labels=NULL,
               plot=TRUE, verbose=FALSE, ...)

## S3 method for class 'character'
beadsplot(x, data, horizontal=FALSE,
               col=NULL, sheer=NULL, shading=NA, shading.angle=NA,
```

```
                bw=0.2, lwd=1, lwd.center=lwd,
                legend=TRUE, label.factor=TRUE, label.range=TRUE,
                drift.label.factor=c(0.2,2), drift.label.range=c(0,0),
                S=min, E=mean, N=max, summary.labels=NULL,
                plot=TRUE, verbose=FALSE, ...)

## S3 method for class 'formula'
beadsplot(formula, data, horizontal=FALSE,
                col=NULL, sheer=NULL, shading=NA, shading.angle=NA,
                bw=0.2, lwd=1, lwd.center=lwd,
                legend=TRUE, label.factor=TRUE, label.range=TRUE,
                drift.label.factor=c(0.2,2), drift.label.range=c(0,0),
                S=min, E=mean, N=max, summary.labels=NULL,
                plot=TRUE, verbose=FALSE, ...)
```

Arguments

x	data frame, contains observation columns (for beadsplot.default, that is, = beadsplot.data.frame). numeric vector, as a single observation data (for beadsplot.numeric). character, as a column name of factor (for beadsplot.character).
index	factor to separate rows. default (NULL) is to plot without factors. character vector, or data frame with a single column, as a factor to separate rows (for beadsplot.default and beadsplot.numeric).
formula	formula, a model formula, eg. factor ~ obs1 + obs2 + obs3 (for beadsplot.formula).
data	data.frame, contains variables in formula (for beadsplot.formula), or observation columns with a factor column (for beadsplot.character).
horizontal	if TRUE is given, diamond beads are plotted horizontally. default is FALSE.
col	character vector, as colors by factor. default is NULL to select colors automatically.
sheer	numeric vector of four items, as trasparencies, that is, alpha levels of colors. each item must be between 0 and 1, 1 is for solid colors. items are in sequence of legend, label, border and diamond. default is NULL, same as c(1, 0.9, 0.6, 0.2), legneds use solid colors, labels almost solid, borders sheer, and diamods are most sheer.
shading	numeric vector, as shading density to draw inside of beads. default is NA to draw automatic, usually no shadings. the density value means lines per inch. the generator depends the vector length. **1** a sigle value is used to all densities **2** values are generated between the pair **k** when k is number of factor levels, values are used to each level logical value TRUE has a special meaning to enable shading with automatic densities.

shading.angle	numeric vector, as shading angle to draw inside of beads. default is NA to draw automatic, usually no shadings. the angle value means degree of line direction to horizon. the generator depends the vector length with same manner of density.
bw	numeric value, as half of bead width relative to series distance, default is 0.2, is 40% width.
lwd	numeric value, as line width of bead border, default is 1. set NULL to disable border line.
lwd.center	numeric value, as line width of bead center, default is lwd, same width as border. set NULL to disable center line.
legend	logical value, to control the display of legned located at top. set FALSE to disable the legend. default is TRUE.
label.factor	logical value, to control the display of labels located at each bead. set FALSE to disable the labels. default is TRUE. character vector, as alternative labels can be also specified.
label.range	logical value, to control the display of whole range values. set FALSE to disable showing range values. default is TRUE.
drift.label.factor	numeric vector, as (value, cycle) to give small drifts to factor label location. default is c(0.2, 2), to generate 0.2, 0, 0.2, 0, ...
drift.label.range	numeric vector, as (value, cycle) to give small drifts to range label location. default is c(0, 0), to generate no drifts.
S	function, to calculate summary for bottom vertex. default is min.
E	function, to calculate summary for center diagonal. default is mean.
N	function, to calculate summary for top vertex. default is max.
summary.labels	character vector, as names of summary functions S, E and N. eg. c('Minimum','Mean','Maximum'). default is NULL, no explicit names.
plot	if FALSE is given, it disable to plot and print a summary. default is TRUE.
verbose	if TRUE is given, it print verbose debugging information. default is FALSE.
...	plot parameters and scale parameters are acceptable.

Details

This function is designed to visualize an overview of a data frame with one factor. Such as, soil chemical components of several sites.
When you have recommended values or critical limits for upper and lower which you want to compare with the data, scale parameter arguments scale.data.center and scale.data.border can be used. Eg. setting critical values of pH, Nitrogen and Phosphorus and draw horizontal grids as these critical values.

Value

A summary list is explicitly printed when plot=FALSE is given, and is invisibly returned when plot=TRUE.

`scaled`	scaled summary of three-dimensional array (series, factors, summaries) **series** each column of data **factors** each index **summaries** S/min, E/mean, N/max for one-dimensional vector data, series=1 is used. for one-level index=NULL, factors=1 is used.
`raw`	unscaled summary of three-dimensional array (series, factors, summaries) data structure is same as scaled item.
`scale`	scaling parameters

Scale parameters

scale.range Numeric value with default=1. Width between center and border grids. NULL turns off scaling.

scale.mean Numeric value with default=0. Location of center grid. NULL turns off centering.

scale.log Logical value with default=FALSE. TRUE enables log10 scaling.

scale.data.center Numeric vector with default=NULL. Give center value vector from outside. See section Details and Examples.

scale.data.border Numeric matrix with default=NULL. Give border value matrix from outside. See section Details and Examples.

scale.grid.center Character value with default=NA. Color of center grid. NULL turns off drawing the grid.

scale.grid.border Character value with default=NA. Color of border grids. NULL turns off drawing the grids.

cex.axis Numeric value with default=1. Font size of grid label.

Author(s)

Shinichiro Tomizono

References

Beads Summary Plot of Ranges: http://tomizonor.wordpress.com/2013/11/12/beads-plot/

See Also

`range`, `min`, `max`, `mean`.

Examples

```
# iris data, by Species
beadsplot(Species~., iris)
beadsplot('Species', iris)
beadsplot(iris[1:4], iris[5])
beadsplot(iris[1:4], iris[,5])
```

```
# iris data, Petal.Length by Species
beadsplot(iris['Petal.Length'], iris['Species'], drift.label.factor=-0.2)

# horizontal
beadsplot(Species~., iris, horizontal=TRUE)

# color, sheer and shading
beadsplot(Species~., iris,
          col=c('tomato1','tomato4','tomato3'), sheer=c(1,0.3,0.6,0.05))
beadsplot(Species~., iris, bw=0.5, label.factor=FALSE,
          sheer=c(1,0.9,0.6,0.4), lwd=NULL)
beadsplot(Species~., iris, shading=c(3,5))

# labels
beadsplot(Species~., iris, label.factor=FALSE)
beadsplot(Species~., iris, label.factor=c('a','b','c'),
          drift.label.factor=0.05)
beadsplot(Species~., iris, legend=FALSE)

# scale grids
## disable grids
beadsplot(Species~., iris, scale.grid.center=FALSE, scale.grid.border=FALSE)
## color grids
beadsplot(Species~., iris, scale.grid.center='red', scale.grid.border='tan')

# scaling
beadsplot(Species~., iris, scale.range=50, scale.mean=50)
## no centering by mean
beadsplot(Species~., iris, scale.mean=NULL)
## plot raw values
beadsplot(Species~., iris, scale.range=NULL, scale.mean=NULL)
beadsplot(Species~., iris, scale.range=NULL, scale.mean=NULL, scale.log=TRUE)
## custom value scaling

### critical matrix as ranges of versicolor,
###   in sequeence of Sep.Len, Sep.Wid, Pet.Len, Pet.Wid
criticals <- matrix(c(4.9,7.0, 2.0,3.4, 3.0,5.1, 1.0,1.8), nrow=2, ncol=4)
beadsplot(Species~., iris, scale.data.border=criticals)

### recommend vector as mean of versicolor, in sequeence of
###            S.Len, S.Wid, P.Len, P.Wid
recommend <- c(5.936, 2.770, 4.260, 1.326)
beadsplot(Species~., iris, scale.data.border=criticals, scale.data.center=recommend)
### when both of center and border is specified,
### center is dominance, border is adjusted to indicate
### the width between lower and upper grids.
### in this case, criticals can be simplified as follows,
### criticals <- matrix(c(0,2.1, 0,1.4, 0,2.1, 0,0.8), nrow=2, ncol=4)
### because differences each are used.

### recommend vector as mean of setosa, in sequeence of
###             S.Len, S.Wid, P.Len, P.Wid
recommend2 <- c(5.006, 3.428, 1.462, 0.246)
```

```
beadsplot(Species~., iris, scale.data.border=criticals, scale.data.center=recommend2)
### center grid is on setosa mean,
### lower and upper grids indicate versicolor range width.

beadsplot(Species~., iris, scale.data.center=recommend2)
### center grid is on setosa mean,
### lower and upper grids indicate whole range width.

# using median and IQR
q1 <- function(x) fivenum(x)[2]
q3 <- function(x) fivenum(x)[4]
q2 <- median
beadsplot(Species~., iris, S=q1, E=q2, N=q3)

# graphic parameters
beadsplot(Species~., iris, cex=0.7, cex.axis=0.7)

# print summary
beadsplot(Species~., iris, plot=FALSE)
```

Index

∗Topic **hplot**
beadsplot, 3
diaplt-package, 2
∗Topic **package**
diaplt-package, 2

beadsplot, *2*, 3

diaplt *(*diaplt-package*)*, 2
diaplt-package, 2

max, *6*
mean, *6*
min, *6*

range, *6*