Package 'LSD'

October 12, 2022

Version 4.1-0

Date 2020-06-16

Title Lots of Superior Depictions

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Description Create lots of colorful plots in a plethora of variations. Try the LSD demotour().

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LazyData true

RoxygenNote 7.1.0

NeedsCompilation no

Repository CRAN

Date/Publication 2020-06-17 09:50:18 UTC

R topics documented:

align   *Visualize two-dimensional data in a color encoded fashion*

Description

Depict any matrix or list in a color encoded rectangular fashion.

Usage

```
align(
  input,
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  label = FALSE,
  digits = 1,
  border = NULL,
  xlim = NULL,
  ylim = NULL,
```

```
    main = NULL,
    axes = TRUE,
    ...
)
```

Arguments

input	matrix or list with any type of entries.
colpal	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (see disco() or `disco`).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see `daltonize`).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see `daltonize`).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
label	logical: if TRUE (FALSE by default), labels are added according to the color scheme (i.e. binning).
digits	integer indicating the number of decimals to be used for binning of continuous data.
border	color for rectangle border(s). Use border = NA to omit borders.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
main	title of the plot, standard graphics parameter.
axes	logical: if TRUE (by default), a box and axes are added to the plot (if FALSE, custom specification of axes can be achieved via basic R graphics functions).
...	additional parameters to be passed to points and plot.

Author(s)

Phillipp Torkler, Bjoern Schwalb

See Also

`clusterplot`, `demotour`, `disco`, `colorpalette`

Examples

```
data(seqs)
colpal = c("A" = "darkgreen","C" = "darkblue","G" = "yellow","T" = "darkred")
align(seqs,colpal = colpal,label = TRUE,main = "DNA sequences")

data(homer)
colpal = c("white","black","yellow","wheat3")
align(homer,colpal = colpal,main = "D'OH!",asp = 1,axes = FALSE)
```

---

clusterplot   *Visualize two-dimensional data clusters*

Description

Depict a numeric matrix or list utilizing the underlying distribution quantiles of one dimension in a color encoded fashion.

Usage

```
clusterplot(
  input,
  label = NULL,
  at = NULL,
  main = NULL,
  xlim = NULL,
  ylim = NULL,
  xlabels = NULL,
  fromto = c(0.05, 0.95),
  colpal = "standardheat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  nrcol = 25,
  outer.col = "lightgrey",
  quartiles.col = c("grey", "black", "grey"),
  add.quartiles = TRUE,
  separate = TRUE,
  rev = FALSE,
  size = TRUE,
  alpha = NULL,
  axes = TRUE,
  ...
)
```

Arguments

input	matrix or list with numerical entries.
label	a character vector assigning rows/elements of 'input' to clusters (if specified, multiple clusters can be depicted in different colors and/or subsequent plots).
at	a integer vector containing the x-positions corresponding to the columns of 'input'.
main	title(s) of the plot, standard graphics parameter.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.

xlabels	a character vector containing labels for the x-axis.
fromto	a numeric vector containing the range of quantiles (between 0 and 1) to be plotted.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 25, if not specified).
outer.col	R built-in color to be used for outlier lines (lines outside of 'fromto').
quartiles.col	a character vector containing three R built-in colors for quartile lines (c('0.25','0.5','0.75')).
add.quartiles	logical: if TRUE (by default), lines are plotted corresponding to the quartiles.
separate	if TRUE (by default), different clusters are depicted in subsequent plots.
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
size	logical: if TRUE (by default), the size of each cluster is added to the title of the respective plot.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
axes	logical: if TRUE (by default), a box and axes are added to the plot (if FALSE, custom specification of axes can be achieved via basic R graphics functions).
...	additional parameters to be passed to points and plot.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

[singleclusterplot](#), [align](#), [demotour](#), [disco](#), [colorpalette](#)

Examples

```
samples = 100
probes = 75
at = 1:probes
clus = matrix(rnorm(probes*samples,sd=1),ncol=probes)

clus = rbind(
t(t(clus)+sin(1:probes/10))+1:nrow(clus)/samples,
t(t(clus)+sin(pi/2+1:probes/10))+1:nrow(clus)/samples)
```

```
quartiles.col = c("transparent","black","transparent")
colpal = c("standardheat","crazyblue","crazyred","crazygreen")

labs = paste("cluster",kmeans(clus,4)$cluster)
clusterplot(clus,fromto=c(0,1))

clusterplot(clus,labs,separate=FALSE,xaxt="n",fromto=c(0.4,0.6),colpal=colpal,
outer.col="none",ylim=c(-2,3),quartiles.col = quartiles.col)

clusterplot(clus,labs,colpal=colpal)

labs = paste("cluster",kmeans(clus,2)$cluster)
colpal = c("greens","purples")
clusterplot(clus,labs,separate=FALSE,xaxt="n",fromto=c(0.3,0.7),colpal=colpal,
outer.col="none",ylim=c(-1,2),alpha=50,quartiles.col = quartiles.col)
```

---

colorpalette   *Provides colorpalettes containing R built-in colors*

Description

Provides pre-designed colorpalettes (character vectors containing R built-in colors) of this and several other R packages (grDevices, RColorBrewer, colorRamps) as well as custom-made ones.

Usage

```
colorpalette(
  colpal,
  nrcol = NULL,
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  rev = FALSE
)
```

Arguments

colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or `disco`).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to length of `colpal`, if not specified).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is returned to simulate dichromat vision according to http://www.daltonize.org (see `daltonize`).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is returned to enhance dichromat vision according to http://www.daltonize.org (see `daltonize`).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).

| alpha | alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default). |
| rev | logical: if TRUE (FALSE by default), a reversed colorpalette is returned. |

Value

colorpalette returns a vector containing R built-in colors in hexadecimal representation.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

disco, demotour

Examples

```
colorpalette("heat")
colorpalette(c("darkred","grey","darkblue"),10)
```

---

comparisonplot   *Comparisonplot: a fancy scatterplot*

Description

A function to compare two vectors extensively.

Usage

```
comparisonplot(
  x,
  y,
  histbreaks = 30,
  adjust = 1,
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  rev = FALSE,
  main = "comparisonplot",
  cor = FALSE,
  xlab = NULL,
  ylab = NULL,
  xlim = NULL,
  ylim = NULL,
  ab = FALSE,
```

```
    add.density = FALSE,
    col.density = "darkred",
    pimp = FALSE,
    ...
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
histbreaks	a non-negative integer specifying the number of breaks of the histograms.
adjust	scale the used bandwidth of the density estimate, if add.density = TRUE.
colpal	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (see disco() or disco).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see daltonize).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see daltonize).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
main	title(s) of the plot, standard graphics parameter.
cor	if TRUE (FALSE by default), the correlation is added to the title.
xlab	x label, standard graphics parameter.
ylab	y label, standard graphics parameter.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
ab	if TRUE (FALSE by default), abline(0,1) is added to the heatscatter.
add.density	if TRUE (FALSE by default), density lines are added to the barplots.
col.density	R built-in color to specify the color of the density line.
pimp	if TRUE (FALSE by default), the plot is pimped.
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

align, demotour, disco, colorpalette

Examples

```
points = 10^4
x = c(rnorm(points/2),rnorm(points/2)+4)
y = x + rnorm(points,sd=0.8)
x = sign(x)*abs(x)^1.3

comparisonplot(x,y,histbreaks=30,pch=20)
```

---

complementarycolor   *Complement R colors*

Description

Convert R built-in colors to their color complement

Usage

```
complementarycolor(cols, alpha = NULL)
```

Arguments

cols	a character vector containing R built-in colors.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).

Value

complementarycolor returns a vector containing R built-in colors in hexadecimal representation.

Author(s)

Bjoern Schwalb

See Also

disco, colorpalette, demotour

Examples

```
complementarycolor(c("red","green","blue"))
```

---

convertcolor   *Map R colors to hexadecimal representation*

Description

Convert R built-in colors to hexadecimal representation.

Usage

```
convertcolor(cols, alpha = NULL)
```

Arguments

cols   a character vector containing R built-in colors.

alpha   alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appear-
              ance of partial or full transparency (usage omitted by default).

Value

convertcolor returns a vector containing R built-in colors in hexadecimal representation.

Author(s)

Bjoern Schwalb

See Also

[disco](#), [colorpalette](#), [demotour](#)

Examples

```
convertcolor(c("red","green","blue"))
```

---

convertgrey   *Convert R colors to greyscale*

Description

Greyscale R built-in colors.

Usage

```
convertgrey(cols, alpha = NULL)
```

Arguments

cols	a character vector containing R built-in colors.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).

Value

convertgrey returns a vector containing R built-in colors in hexadecimal representation.

Author(s)

Bjoern Schwalb

See Also

[disco](), [colorpalette](), [demotour]()

Examples

```
convertgrey(c("red","green","blue"))
```

---

daltonize   *Dichromat vision simulation for colorpalettes*

Description

Dichromat vision simulation and enhancement according to <http://www.daltonize.org>.

Usage

```
daltonize(colpal, cvd = "p", show = TRUE)
```

Arguments

colpal	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (see disco() or [disco]()).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
show	logical: if TRUE (by default), the resulting colorpalettes are depicted in an R plot.

Value

daltonize returns a list, where each entry is a vector containing R built-in colors in hexadecimal representation:

simulated	vector of simulated colors
enhanced	vector of enhanced colors

Author(s)

Bjoern Schwalb

References

<http://www.daltonize.org>

See Also

disco, colorpalette, demotour

Examples

```
daltonize("heat",cvd = "d")
daltonize("colorblind",cvd = "p")
```

---

demotour	*LSD teaser*

Description

A compilation of selected plot examples.

Usage

```
demotour()
```

Author(s)

Bjoern Schwalb

See Also

heatscatter, clusterplot, disco, colorpalette, daltonize

Examples

```
demotour()
```

---

densitylane *Visualize a density in a rectangular fashion*

Description

Add a color stripe to an existing plot based on a kernel density estimate.

Usage

```
densitylane(
  x,
  y,
  pos = 1,
  width = 0.4,
  colpal = "standard",
  rev = FALSE,
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  horizontal = horizontal,
  nrcol = 75
)
```

Arguments

x	density$x values of a density object.
y	density$y values of a density object.
pos	the x co-ordinate of the lane (mid point).
width	a numeric value giving the width of the lane.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
horizontal	logical: if TRUE (FALSE by default), rotation of 90 degrees is applied.
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

---

disco   *Disco (DISplays COlorpalettes)*

Description

Displays pre-designed colorpalettes as well as custom-made ones (see `colorpalette`).

Usage

```
disco(colpal = NULL, nrcol = NULL, alpha = NULL)
```

Arguments

colpal	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (displays all colorpalettes, if not specified).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to length of `colpal`, if not specified).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).

Author(s)

Bjoern Schwalb

See Also

[colorpalette](), [demotour]()

Examples

```
disco()
disco("rdbu",10)
```

---

distinctcolors | *Find preferably distinct R built-in colors*

Description

Find a vector of distinct R built-in colors for a pre-defined length ('nrcol').

Usage

```
distinctcolors(
  nrcol = 10,
  method = "RGB",
  bw = FALSE,
  show = TRUE,
  simulate = TRUE
)
```

Arguments

nrcol   a non-negative integer specifying the number of colors to be used (defaults to the length of 10, if not specified).

method   character string implying the method for color selection to be used ("RGB" uses a grid in the RGB space (default), "Lab" uses a grid in the Lab space, "golden-ratio" uses the golden ratio as spacing between colors in the HSV color space).

bw   logical: if TRUE (FALSE by default), the colors "black" and "white" are removed from the resulting colorpalette.

show   logical: if TRUE (by default), the resulting colorpalettes are depicted in an R plot.

simulate logical: if TRUE (by default), a converted colorpalettes are additionally depicted to simulate dichromat vision according to http://www.daltonize.org (see daltonize).

Value

distinctcolors returns a vector containing R built-in colors in hexadecimal representation.

Author(s)

Bjoern Schwalb

See Also

disco, colorpalette, demotour

Examples

```
distinctcolors()
```

ellipsescatter	*Visualize subgroups of two-dimensional data assuming normal distributions*

Description

A scatterplot with additional colored ellipses based on a gaussianity assumption.

Usage

```
ellipsescatter(
  x,
  y,
  groups,
  colors = NULL,
  pch = 20,
  bgcol = "darkgrey",
  main = "ellipsescatter",
  xlab = NULL,
  ylab = NULL,
  scalesd = 1,
  level = 0.75,
  legend.cex = 1,
  location = "topright",
  ...
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
groups	a list of indices or vector names to be plotted as groups (not necessarily all of x and y).
colors	a character vector of R build-in colors corresponding to the chosen groups.
pch	the plotting character (to be passed to plot).
bgcol	a R build-in color for non-grouped points.
main	title(s) of the plot, standard graphics parameter.
xlab	x label, standard graphics parameter.
ylab	y label, standard graphics parameter.
scalesd	a numeric value giving the scaling factor for standard deviations in each dimension (defaults to 1).
level	a numeric value (between 0 and 1) giving the confidence level of a pairwise confidence region.

legend.cex	a numerical value giving the amount by which the added legend should be magnified relative to the default.
location	the x and y co-ordinates to be used to position the legend (see 'xy.coords').
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[demotour](), [disco](), [colorpalette]()

Examples

```
x = c(rnorm(50),rnorm(100,2),rnorm(50,4))
y = (x + rnorm(200,0,0.8))*rep(c(1,4,1),c(50,100,50))
x = sign(x)*abs(x)^1.3

groups = list("Green" = 1:50,"Red" = 51:150,"Blue" = 151:200)
colors = c("darkgreen","darkred","darkblue")
ellipsescatter(x,y,groups,colors,location = "topleft")
```

---

emptyplot	*Wrapper function for an empty graphics device*

Description

Calls an empty graphics device with a coordinate system of choice.

Usage

```
emptyplot(xlim = c(-1, 1), ylim = c(-1, 1), ...)
```

Arguments

xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[demotour]()

Examples

```
emptyplot()
```

| fusionplot | *Visualize two-dimensional data clusters* |

Description

Depict a numeric matrix or list utilizing the underlying distribution quantiles of one dimension in a color encoded fashion.

Usage

```
fusionplot(
  x,
  y,
  label = NULL,
  main = NULL,
  xlim = NULL,
  ylim = NULL,
  fromto = c(0.05, 0.95),
  colpal = "standardheat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  nrcol = 25,
  outer.col = "lightgrey",
  quartiles.col = c("grey", "black", "grey"),
  add.quartiles = TRUE,
  separate = TRUE,
  rev = FALSE,
  size = TRUE,
  alpha = NULL,
  axes = TRUE,
  ...
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
label	a character vector assigning rows/elements of 'input' to clusters (if specified, multiple clusters can be depicted in different colors and/or subsequent plots).
main	title(s) of the plot, standard graphics parameter.
xlim	x limits, standard graphics parameter.

ylim	y limits, standard graphics parameter.
fromto	a numeric vector containing the range of quantiles (between 0 and 1) to be plotted.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 25, if not specified).
outer.col	R built-in color to be used for outlier lines (lines outside of 'fromto').
quartiles.col	a character vector containing three R built-in colors for quartile lines (c('0.25','0.5','0.75')).
add.quartiles	logical: if TRUE (by default), lines are plotted corresponding to the quartiles.
separate	if TRUE (by default), different clusters are depicted in subsequent plots.
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
size	logical: if TRUE (by default), the size of each cluster is added to the title of the respective plot.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
axes	logical: if TRUE (by default), a box and axes are added to the plot (if FALSE, custom specification of axes can be achieved via basic R graphics functions).
...	additional parameters to be passed to points and plot.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

[singlefusionplot](#), [align](#), [demotour](#), [disco](#), [colorpalette](#)

Examples

```
nr = 750
x = 1:nr/300
y = c(rnorm(nr)+sin(2*x)*3,rnorm(nr)+sin(2*x+pi/2)*3)
x = c(x,x)

labs = paste("cluster",c(rep(c(1,2),each = nr)))
colpals = c("oranges","pubu")
qcol = c("transparent","black","transparent")
fusionplot(x,y,labs,separate=FALSE,colpal=colpals,alpha=75,quartiles.col = qcol)
```

---

heatbarplot   *Color a barplot.*

Description

Depict a histogram object as a barplot in a color encoded fashion based on a kernel density estimate.

Usage

```
heatbarplot(
  x,
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  rev = FALSE,
  horizontal = FALSE,
  nrcol = 100,
  ...
)
```

Arguments

x	a histogram object.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
horizontal	logical: if TRUE (FALSE by default), rotation of 90 degrees is applied.
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
points = 10^4
x = c(rnorm(points/2),rnorm(points/2)+4)
x = sign(x)*abs(x)^1.3
xhist = hist(x,plot = FALSE)

heatbarplot(xhist)
```

---

heatboxplot   *Heatboxplot: a colored boxplot*

Description

A boxplot with an additional color stripe based on a kernel density estimate.

Usage

```
heatboxplot(
  x,
  horizontal = FALSE,
  add = FALSE,
  colpal = "standard",
  rev = FALSE,
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  colpals = NULL,
  nrcol = 75,
  lwd = 1.75,
  axes = TRUE,
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  xlab = NULL,
  ylab = "",
  main = "heatboxplot",
  nolab = FALSE,
  outline = TRUE,
  boxonly = FALSE,
  adjust = 1,
  quant.from = 0.25,
  quant.to = 0.75,
```

```
    range = 1.5,
    border = "black",
    plot.boxplot = TRUE,
    add.quartiles = TRUE,
    add.box = FALSE,
    n.density = 1024,
    cexbox = 0.6,
    ...
)
```

Arguments

x	data as vector, matrix, list or data.frame.
horizontal	logical: if TRUE (FALSE by default), rotation of 90 degrees is applied.
add	logical: if TRUE (FALSE by default), the boxplot is added to an existing plot.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to http://www.daltonize.org (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
colpals	a character vector containing names of LSD colorpalettes (see disco() or [disco](#)).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
lwd	linewidth of the box and whiskers.
axes	logical: if TRUE (by default), the axes are plotted.
labels	a character vector of labels.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
xlab	x label, standard graphics parameter.
ylab	y label, standard graphics parameter.
main	title(s) of the plot, standard graphics parameter.
nolab	logical: if TRUE (FALSE by default), the title and ylab are suppressed.
outline	logical: if TRUE (by default), outliers are plotted.
boxonly	logical: if TRUE (FALSE by default), the density is only be plotted in the box.
adjust	a numeric value giving the scaling factor for the used bandwidth (defaults to 1).

quant.from	a numeric value (between 0 and 1) giving the quantile from which the density lane should be plotted.
quant.to	a numeric value (between 0 and 1) giving the quantile to which the density lane should be plotted.
range	a numeric value to determine how far the plot whiskers extend out from the box.
border	an R build-in color for the box and whiskers.
plot.boxplot	logical: if TRUE (by default), the boxplot is added to the density.
add.quartiles	if TRUE (FALSE by default), only the box of the boxplot is added (if plot.boxplot = FALSE).
add.box	logical: if TRUE (by default), the box is added to the plot.
n.density	an integer specifying the number of equally spaced points at which the density is to be estimated.
cexbox	a numerical value giving the amount by which the boxes should be magnified relative to the default.
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
f = c(rnorm(200),rnorm(200)+4)
h = rf(500,15,15)*10
g = rnorm(300)+1

heatboxplot(h)

heatboxplot(list(f=f,g=g),colpals=c("rdpu","greens"),labels=c("bimodal","unimodal"))
```

---

heathist	*Color a histogram*

Description

A histogram with an additional color stripe based on a kernel density estimate.

Usage

```
heathist(
  x,
  breaks = 20,
  xlab = NULL,
  ylab = NULL,
  main = "heathist",
  colpal = "greys",
  rev = FALSE,
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  nobox = FALSE,
  add.density = FALSE,
  col.density = "darkred",
  add.rug = TRUE,
  col.rug = "black",
  nrcol = 100,
  ...
)
```

Arguments

x	a numeric vector.
breaks	a numeric value giving the breaks of the histogram.
xlab	x label, standard graphics parameter.
ylab	y label, standard graphics parameter.
main	title(s) of the plot, standard graphics parameter.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
nobox	logical: if TRUE (FALSE by default), the box of the plot is omitted.
add.density	if TRUE (FALSE by default), a density line is added to the histogram.
col.density	a R build-in color for the density line (if add.density = TRUE).

add.rug	if TRUE (FALSE by default), a rug (1-d plot of the data) is added below the histogram-bars.
col.rug	a R build-in color for the rug (if add.rug = TRUE).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
x = rnorm(1000,mean = sample(c(0,3),size = 1000,prob = c(0.4,0.6),replace = TRUE))
heathist(x,xlab="x",add.density=TRUE,col.rug="darkred")

heathist(x,xlab="x",colpal = "matlablike")
```

---

heatpairs	*Pairwise colored scatterplot based on a two-dimensional Kernel Density Estimation*

Description

Pairwise visualization of two dimensional data in a three dimensional fashion facilitating a color encoded Kernel Density Estimation.

Usage

```
heatpairs(
  mat,
  main = "heatpairs",
  xlim = NULL,
  ylim = NULL,
  labels = NULL,
  add.points = FALSE,
  group = NULL,
  color.group = "magenta",
  method = "spearman",
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
```

```
    alpha = NULL,
    rev = FALSE,
    pch = 19,
    cexplot = 0.5,
    cor.cex = 2.5,
    nrcol = 30,
    grid = 100,
    only = "none",
    add.contour = FALSE,
    nlevels = 10,
    color.contour = "black",
    greyscale = FALSE,
    log = "",
    ...
)
```

Arguments

mat	a matrix with numerical entries.
main	title(s) of the plot, standard graphics parameter.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
labels	a character vector giving the labels to be shown on the diagonal.
add.points	logical: if TRUE (FALSE by default), a certain 'group' of points can be colored in all pairwise plots.
group	indices or rownames of 'mat' to be highlighted in all pairwise plots (not necessarily all).
color.group	R build-in color in which the 'group' of points should be highlighted.
method	a character specifying the correlation method to use ('spearman' (default), 'pearson' or 'kendall').
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
pch	plotting 'character'. This can either be a single character or an integer code for one of a set of graphics symbols. (see '?pch', to be passed to plot).

cexplot	a numerical value giving the amount by which the points should be magnified relative to the default.
cor.cex	a numerical value giving the amount by which the correlation characters should be magnified relative to the default.
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
grid	an integer specifying the size of the grid used for the KDE.
only	a character string which contains 'x' if the density should only be computed for the x axis, 'y' for the y axis (defaults to 'none' for the two-dimensional case).
add.contour	logical: if TRUE (FALSE by default), the contour lines are added to the plot.
nlevels	an integer giving the number of levels of the contour lines.
color.contour	R build-in color for the contour lines.
greyscale	logical: if TRUE (FALSE by default), the used colorpalette is converted to greyscales.
log	a character string which contains "x" if the x axis is to be logarithmic, "y" if the y axis is to be logarithmic and "xy" or "yx" if both axes are to be logarithmic.
...	additional parameters to be passed to points and plot

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
points = 10^4
x = rnorm(points/2)
x = c(x,x+2.5)
y = x + rnorm(points,sd=0.75)
x = sign(x)*abs(x)^1.3
mat = cbind(x,y,x + rnorm(points,sd=0.5))
colnames(mat) = c("x","y","z")
rownames(mat) = 1:nrow(mat)

heatpairs(mat,labels=c(expression(Xi),expression(Lambda),expression(Delta)))
```

heatscatter	*A colored scatterplot based on a two-dimensional Kernel Density Estimation*

Description

Visualize two dimensional data in a three dimensional fashion facilitating a color encoded Kernel Density Estimation.

Usage

```
heatscatter(
  x,
  y,
  pch = 19,
  cexplot = 0.5,
  nrcol = 30,
  grid = 100,
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  rev = FALSE,
  xlim = NULL,
  ylim = NULL,
  xlab = NULL,
  ylab = NULL,
  main = "heatscatter",
  cor = FALSE,
  method = "spearman",
  only = "none",
  add.contour = FALSE,
  nlevels = 10,
  color.contour = "black",
  greyscale = FALSE,
  log = "",
  ...
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
pch	plotting 'character'. This can either be a single character or an integer code for one of a set of graphics symbols. (see '?pch', to be passed to plot).

cexplot	a numerical value giving the amount by which the points should be magnified relative to the default.
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
grid	an integer specifying the size of the grid used for the KDE.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
xlab	x labels, standard graphics parameter.
ylab	y labels, standard graphics parameter.
main	title(s) of the plot, standard graphics parameter.
cor	logical: if TRUE (FALSE by default), the correlation is added to the title.
method	a character specifying the correlation method to use ('spearman' (default), 'pearson' or 'kendall').
only	a character string which contains 'x' if the density should only be computed for the x axis, 'y' for the y axis (defaults to 'none' for the two-dimensional case).
add.contour	logical: if TRUE (FALSE by default), the contour lines are added to the plot.
nlevels	an integer giving the number of levels of the contour lines.
color.contour	R build-in color for the contour lines.
greyscale	logical: if TRUE (FALSE by default), the used colorpalette is converted to greyscales.
log	a character string which contains "x" if the x axis is to be logarithmic, "y" if the y axis is to be logarithmic and "xy" or "yx" if both axes are to be logarithmic.
...	additional parameters to be passed to points and plot.

Note

Two-Dimensional Kernel Density Estimation adapted and modified from Venables and Ripley's MASS package (see reference).

Author(s)

Achim Tresch, Bjoern Schwalb

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S.* Fourth edition. Springer.

See Also

comparisonplot, demotour, disco, colorpalette

Examples

```
points = 10^4
x = c(rnorm(points/2),rnorm(points/2)+4)
y = x + rnorm(points,sd=0.8)
x = sign(x)*abs(x)^1.3

heatscatter(x,y)

heatscatter(x,y,colpal="bl2gr2rd",main="bl2gr2rd",cor=FALSE)

heatscatter(x,y,cor=FALSE,add.contour=TRUE,color.contour="red",greyscale=TRUE)

heatscatter(x,y,colpal="spectral",cor=FALSE,add.contour=TRUE)
```

---

heatscatterpoints	*A colored scatterplot based on a two-dimensional Kernel Density Estimation (add to an existing plot)*

Description

Visualize two dimensional data in a three dimensional fashion facilitating a color encoded Kernel Density Estimation (add to an existing plot).

Usage

```
heatscatterpoints(
  x,
  y,
  pch = 19,
  cexplot = 0.5,
  nrcol = 30,
  grid = 100,
  colpal = "heat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  alpha = NULL,
  rev = FALSE,
  xlim = NULL,
  ylim = NULL,
```

```
    only = ”none”,
    add.contour = FALSE,
    nlevels = 10,
    color.contour = ”black”,
    greyscale = FALSE,
    log = ””,
    ...
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
pch	plotting 'character'. This can either be a single character or an integer code for one of a set of graphics symbols. (see '?pch', to be passed to plot).
cexplot	a numerical value giving the amount by which the points should be magnified relative to the default.
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 100, if not specified).
grid	an integer specifying the size of the grid used for the KDE.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
only	a character string which contains 'x' if the density should only be computed for the x axis, 'y' for the y axis (defaults to 'none' for the two-dimensional case).
add.contour	logical: if TRUE (FALSE by default), the contour lines are added to the plot.
nlevels	an integer giving the number of levels of the contour lines.
color.contour	R build-in color for the contour lines.
greyscale	logical: if TRUE (FALSE by default), the used colorpalette is converted to greyscales.
log	a character string which contains "x" if the x axis is to be logarithmic, "y" if the y axis is to be logarithmic and "xy" or "yx" if both axes are to be logarithmic.
...	additional parameters to be passed to points and plot.

Note

Two-Dimensional Kernel Density Estimation adapted and modified from Venables and Ripley's MASS package (see reference).

Author(s)

Bjoern Schwalb

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S.* Fourth edition. Springer.

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
points = 10^4
x = c(rnorm(points/2),rnorm(points/2)+4)
y = x + rnorm(points,sd=0.8)
x = sign(x)*abs(x)^1.3

plot.new()
plot.window(xlim = c(-5,15),ylim = c(-4,8))
heatscatterpoints(x,y,add.contour=TRUE,color.contour="green",greyscale=TRUE)
axis(1)
axis(2)
box()
```

---

homer   *homer*

Description

Homer Simpson as a list!

Usage

```
homer
```

Format

This list contains 31 character vectors of length 22 encoding Homer Simpson.

---

intersphere *Intersphere: a fancy Venn diagram*

Description

Create circles for visualizing overlaps between up to 4 datasets.

Usage

```
intersphere(
  data,
  colors = NULL,
  alpha = 25,
  cex = 1,
  expand.circles = 1,
  expand.lims = 1.5,
  main = "intersphere: overlap diagram",
  onlySets = seq(length(data), 2, by = -1)
)
```

Arguments

data	a list with n entries having elements that can be represented as sets (have union and intersect methods).
colors	a character vector of R build-in colors for circles representing different sets.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
cex	a numeric value giving the character expansion factor for intersect size text inside each circle.
expand.circles	a numeric value giving the expansion factor of circles (multiplicative).
expand.lims	a numeric value giving the expansion of x and y limits (additive).
main	title(s) of the plot, standard graphics parameter.
onlySets	vectors, which n-overlaps should be shown, default to all $1 < n <$ length(data).

Author(s)

Sebastian Duemcke, Bjoern Schwalb

See Also

demotour, disco, colorpalette

Examples

```
data = list(
"A" = sample(1:200,100),
"B" = sample(1:200,150),
"C" = sample(1:200,50))

intersphere(data,colors = c("orange","skyblue","green"))

data = list(
"A" = sample(1:200,100),
"B" = sample(1:200,150),
"C" = sample(1:200,50),
"D" = sample(1:200,75))

colors = c("orange","skyblue","green","purple")
intersphere(data,colors,expand.circles = 0.5,expand.lims = 0.5)
```

---

linesplot   *One-dimensional scatterplot*

Description

Visualize one-dimensional data in its every detail.

Usage

```
linesplot(
  x,
  labels = NULL,
  col = "black",
  cols = NULL,
  alpha = 25,
  xlim = NULL,
  ylim = NULL,
  xlab = NULL,
  ylab = "",
  las = 1,
  outline = TRUE,
  cexbox = 0.6,
  addboxes = FALSE,
  border = "black",
  range = 1.5,
  lwd = 1.5,
  main = "LSD.linesplot",
  ...
)
```

Arguments

x	numeric data as vector, matrix, list or data.frame.
labels	a character vector of labels.
col	a R build-in color.
cols	a character vector of R build-in colors.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
xlab	x label, standard graphics parameter.
ylab	y label, standard graphics parameter.
las	las=1: horizontal text, las=2: vertical text (x-axis labels).
outline	logical: if TRUE (by default), outliers are plotted.
cexbox	a numerical value giving the amount by which the boxes should be magnified relative to the default.
addboxes	logical: if TRUE (FALSE by default), boxplots be added to the plot.
border	a R build-in color for the box and the whiskers (if addboxes = TRUE).
range	this determines how far the plot whiskers extend out from the box.
lwd	linewidth of the box and whiskers.
main	title(s) of the plot, standard graphics parameter.
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[demotour](#), [disco](#), [colorpalette](#)

Examples

```
l = list()
for (i in 1:10){l[[i]] = rnorm(100,sqrt(i^2.5),1+i/2)}

linesplot(l,alpha=25,border="darkred",addboxes = TRUE,outline=FALSE)
```

LSD.pie   *Custom-built piechart version*

Description

Piecharts at arbitrary position and radii.

Usage

```
LSD.pie(
  props,
  x = 0,
  y = 0,
  radius = 1,
  colpal = "prgn",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  edges = 1000,
  add = FALSE,
  xlim = c(-1, 1),
  ylim = c(-1, 1),
  main = "LSD.pie: piecharts",
  alpha = NULL,
  addPercent = FALSE,
  textcol = "black",
  clockwise = FALSE,
  init.angle = 0,
  labels = c(),
  cex = 1,
  cex.percentage = cex,
  border = NA,
  ...
)
```

Arguments

props	a numeric vector giving the relations of the pie pieces (need not to be normalized).
x	x-position of the piechart.
y	y-position of the piechart.
radius	a numeric value giving the radius of the piechart.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or [disco](#)) (defaults to "heat", if not specified).

simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see [daltonize](#)).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
edges	an integer giving the number of edges the "circle" will have.
add	logical: if TRUE (FALSE by default), the pie is added to an existing plot.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
main	title(s) of the plot, standard graphics parameter.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
addPercent	logical: if TRUE (FALSE by default), the percentage of each slice is written inside of the pie.
textcol	a R build-in color for the percentages of addPercent.
clockwise	if TRUE (FALSE by default), slices drawn clockwise (counter clockwise, if FALSE).
init.angle	a numerical value representing an angle as a starting angle for the drawn slices.
labels	a character vector giving the names for the pie slices.
cex	scaling a numeric value giving the expansion factor for the slice names (if labels are given).
cex.percentage	a numeric value giving the expansion factor for the percentage values (if addPercent = TRUE).
border	a R build-in color giving the border color (NA by default).
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb, Carina Demel

See Also

[demotour](#), [disco](#), [colorpalette](#)

Examples

```
emptyplot(xlim=c(1,9),ylim=c(1,9))
mtext(paste("LSD.pie: piecharts"),3,2,cex=1.25)
polygon(c(4,2,4,7,8),c(4,8,4,2,8))
LSD.pie(sample(1:50,5),4,4,add=TRUE,radius=2,colpal="prgn",alpha=75)
LSD.pie(sample(1:50,5),2,8,add=TRUE,colpal="prgn",alpha=75)
LSD.pie(sample(1:50,5),8,8,add=TRUE,colpal="prgn",alpha=75)
LSD.pie(sample(1:50,5),7,2,add=TRUE,colpal="prgn",alpha=75)
```

makemovie   *Interpolate rows of a matrix to extend the number of cols*

Description

Interpolate rows of a matrix to yield a smooth transitions.

Usage

```
makemovie(input, timepoints = NULL, timestep = 1, motionline = NULL)
```

Arguments

input	a matrix with numerical entries.
timepoints	a integer vector containing the timepoints corresponding to the columns of 'input'.
timestep	a non-negative integer specifying the number of timesteps between the existing timepoints (defaults to 1, if not specified).
motionline	a integer vector giving the timepoints of the resulting matrix (derived from timepoints and timesteps by default).

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

[clusterplot](), [align](), [demotour]()

Examples

```
len = 10
x = sin(seq(0,2*pi,length=len*2))
fun = function(){n=sample(1:len,1);return(x[n:(n+len-1)])}
input = t(replicate(7,fun(),simplify=TRUE))
input = input + rnorm(length(input))/2
par(mfrow=c(1,2))
plotmatrix(input,main="original",cols=1:7,type="o")
mov = makemovie(input,timestep=0.2)
plotmatrix(mov,main="interpolated",cols=1:7,type="o")
```

---

msdplot   *Visualize two-dimensional data clusters*

Description

Depict a numeric matrix or list utilizing the underlying mean and standard deviation estimates of one dimension in a color encoded fashion.

Usage

```
msdplot(
  input,
  label = NULL,
  at = NULL,
  xlim = NULL,
  ylim = NULL,
  xlab = "",
  ylab = "",
  main = "msdplot",
  xaxt = "s",
  xlabels = NULL,
  las = 1,
  separate = TRUE,
  size = TRUE,
  col = "darkgreen",
  bars = TRUE,
  alpha = 50,
  ...
)
```

Arguments

input	matrix or list with numerical entries, quantiles of cols will define lines.
label	a character vector assigning rows/elements of 'input' to clusters (if specified, multiple clusters can be depicted in different colors and/or subsequent plots).
at	a integer vector containing the x-positions corresponding to the columns of 'input'.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
xlab	x labels, standard graphics parameter.
ylab	y labels, standard graphics parameter.
main	title(s) of the plot, standard graphics parameter.
xaxt	a character which specifies the x axis type ("n" suppresses plotting of the axis).
xlabels	a character vector containing labels for the x-axis.

las	las=1: horizontal text, las=2: vertical text (x-axis labels).
separate	if TRUE (by default), different clusters are depicted in subsequent plots.
size	logical: if TRUE (by default), the size of each cluster is added to the title of the respective plot.
col	a character vector giving R build-in colors for different clusters.
bars	logical: if TRUE (by default), error bars are added at each position.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
...	additional parameters to be passed to points and plot.

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
at = c(2,4,8,16,32)
clus = matrix(rnorm(500,sd=0.5),ncol=5)
batch = sample(c(-8,-6,-4,-2),100,replace=TRUE)
clus = clus + cbind(0,0.25*batch,0.5*batch,0.75*batch,batch)
clus = clus - clus[,1]
clus = t(t(clus)*c(0,0.1,0.25,0.5,1))
labs = paste("cluster",kmeans(clus,4)$cluster)

colpal = c("darkgreen","darkblue","darkred","black")
msdplot(clus,labs,at,separate=FALSE,col=colpal,alpha=25,xlabels=at)

msdplot(clus,labs,at,col=colpal,alpha=50,xlabels=at)
```

---

plotit	*Plotting wrapper function to plot plots in printable quality and all kinds of formats*

Description

Plotting wrapper function to save plots in R as "pdf", "ps", "jpeg", "png", "bmp" or "tiff".

Usage

```
plotit(
  filename,
  sw = 1,
  sh = 1,
  sres = 1,
  plotsfkt,
  ww = 7,
  wh = 7,
  pointsize = 12,
  dev.pointsize = 8,
  paper = "special",
  quality = 100,
  units = "px",
  bg = "white",
  fileformat = "jpeg",
  saveit = FALSE,
  notinR = FALSE,
  addformat = NULL
)
```

Arguments

filename	name of the plot to be saved with the format type suffix.
sw	scaling factor of weight.
sh	scaling factor of height.
sres	scaling factor of the resolution.
plotsfkt	list of plots to be plotted.
ww	width of window.
wh	height of window.
pointsize	the default pointsize of plotted text, interpreted as big points (1/72 inch) for plots to be saved.
dev.pointsize	pointsize of plotted text, interpreted as big points (1/72 inch) for display in R.
paper	needed only if filformat = "pdf" or "ps".
quality	needed only if filformat = "jpeg".
units	needed only if filformat = "jpeg", "png", "bmp" or "tiff".
bg	backgroundcolor.
fileformat	save the plot as "pdf", "ps", "jpeg", "png", "bmp" or "tiff".
saveit	should plot be saved.
notinR	should plot be not plotted in R.
addformat	should plot be saved additionally in another format ("pdf", "ps", "jpeg", "png", "bmp" or "tiff").

Author(s)

Bjoern Schwalb

See Also

[demotour](), [disco](), [colorpalette]()

Examples

```
data(homer)

plotsfkt = function(){
colpal = c("white","black","yellow","wheat3")
align(homer,colpal = colpal,main = "D'OH!",asp = 1,axes = FALSE)
}

# choose 'saveit = TRUE' for saving the plot in the specified fileformat #

# choose 'notinR = TRUE' to suppress plotting in R #

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "jpeg")

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "png")

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "bmp")

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "tiff")

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "ps")

plotit("homer",sw = 2,sh = 2,sres = 2,plotsfkt,saveit = FALSE,notinR = FALSE,fileformat = "pdf")
```

---

plotmatrix	*Visualize two-dimensional data*

Description

Plot the rows of a matrix as lines along the cols.

Usage

```
plotmatrix(
  input,
  xlim = NULL,
  ylim = NULL,
  xlab = "",
  ylab = "",
  main = "plotmatrix",
  type = "l",
```

```
    lwd = 2,
    at = NULL,
    xlabels = NULL,
    ltys = NULL,
    add = FALSE,
    cols = NULL,
    ...
)
```

Arguments

input	a matrix with numerical entries.
xlim	x limits, standard graphics parameter.
ylim	y limits, standard graphics parameter.
xlab	x lab, standard graphics parameter.
ylab	y lab, standard graphics parameter.
main	title of the plot, standard graphics parameter.
type	what 'type' of plot should be drawn (to be passed to points).
lwd	a positive number giving the line width.
at	a integer vector containing the x-positions corresponding to the columns of 'input'.
xlabels	a character vector containing labels for the x-axis.
ltys	a numeric vector giving the line types for each row of 'input'.
add	logical: if TRUE (FALSE by default), lines are added to existing plot.
cols	a character vector of R build-in colors.
...	additional parameters to be passed to points and plot.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

[clusterplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
len = 20
x = sin(seq(0,2*pi,length=len*2))
fun = function(){n=sample(1:len,1); return(x[n:(n+len-1)])}
input = t(replicate(7,fun(),simplify=TRUE))
input = input + rnorm(length(input))/2

plotmatrix(input,cols=1:7)
```

seqs *seqs*

Description

TATAbox containing DNA-sequences!

Usage

```
seqs
```

Format

This list contains 20 character vectors of TATAbox containing DNA-sequences of length 30.

singleclusterplot *Visualize two-dimensional data clusters (add to an existing plot)*

Description

Depict a numeric matrix or list utilizing the underlying distribution quantiles of one dimension in a color encoded fashion (add to an existing plot).

Usage

```
singleclusterplot(
  input,
  at = NULL,
  fromto = c(0.05, 0.95),
  colpal = "standardheat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  nrcol = 25,
  outer.col = "lightgrey",
  rev = FALSE,
  alpha = NULL,
  quartiles.col = c("grey", "black", "grey"),
  add.quartiles = TRUE
)
```

Arguments

input	matrix or list with numerical entries.
at	a integer vector containing the x-positions corresponding to the columns of 'input'.
fromto	a numeric vector containing the range of quantiles (between 0 and 1) to be plotted.
colpal	a character vector containing R built-in color names or a name of a LSD colorpalette as a character string (see disco() or disco).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see daltonize).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see daltonize).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 25, if not specified).
outer.col	R built-in color to be used for outlier lines (lines outside of 'fromto').
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
quartiles.col	a character vector containing three R built-in colors for quartile lines (c('0.25','0.5','0.75')).
add.quartiles	logical: if TRUE (by default), lines are plotted corresponding to the quartiles.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

clusterplot, align, demotour, disco, colorpalette

Examples

```
samples = 100
probes = 200
clus = matrix(rnorm(probes*samples,sd=1),ncol=probes)

clus = rbind(
t(t(clus)+sin(1:probes/10))+1:nrow(clus)/samples,
t(t(clus)+sin(pi/2+1:probes/10))+1:nrow(clus)/samples)

emptyplot(xlim = c(1,ncol(clus)),ylim = range(clus))
singleclusterplot(clus)
axis(1)
axis(2)
box()
```

singlefusionplot   *Visualize two-dimensional data clusters (add to an existing plot)*

Description

Depict a numeric matrix or list utilizing the underlying distribution quantiles of one dimension in a color encoded fashion (add to an existing plot).

Usage

```
singlefusionplot(
  x,
  y,
  fromto = c(0.05, 0.95),
  colpal = "standardheat",
  simulate = FALSE,
  daltonize = FALSE,
  cvd = "p",
  nrcol = 25,
  outer.col = "grey",
  rev = FALSE,
  alpha = NULL,
  quartiles.col = c("grey", "black", "grey"),
  add.quartiles = TRUE
)
```

Arguments

x	a numeric vector.
y	a numeric vector.
fromto	a numeric vector containing the range of quantiles (between 0 and 1) to be plotted.
colpal	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (see disco() or `disco`).
simulate	logical: if TRUE (FALSE by default), a converted colorpalette is used to simulate dichromat vision according to <http://www.daltonize.org> (see `daltonize`).
daltonize	logical: if TRUE (FALSE by default), a converted colorpalette is used to enhance dichromat vision according to <http://www.daltonize.org> (see `daltonize`).
cvd	character string implying the type of color vision deficiency ("p" for protanope, "d" for deuteranope or "t" for tritanope).
nrcol	a non-negative integer specifying the number of colors to be used (defaults to 25, if not specified).
outer.col	R built-in color to be used for outlier lines (lines outside of 'fromto').
rev	logical: if TRUE (FALSE by default), a reversed colorpalette is used.

alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
quartiles.col	a character vector containing three R built-in colors for quartile lines (c('0.25','0.5','0.75')).
add.quartiles	logical: if TRUE (by default), lines are plotted corresponding to the quartiles.

Author(s)

Achim Tresch, Bjoern Schwalb

See Also

[fusionplot](), [align](), [demotour](), [disco](), [colorpalette]()

Examples

```
x = 1:1000/300
y = rnorm(1000)+sin(2*x)*3

emptyplot(xlim = range(x),ylim = range(y))
singlefusionplot(x,y,colpal = "ylgnbu")
axis(1)
axis(2)
box()
```

singlemsdplot   *Visualize two-dimensional data clusters (add to an existing plot)*

Description

Depict a numeric matrix or list utilizing the underlying mean and standard deviation estimates of one dimension in a color encoded fashion (add to an existing plot).

Usage

```
singlemsdplot(
  input,
  col = "darkgreen",
  alpha = 50,
  bars = TRUE,
  length = 0.25,
  at = NULL
)
```

Arguments

input	data as matrix or list.
col	a character vector of R build-in colors.
alpha	alpha value: a two-digit integer between 01 and 99 for color opacity, i.e. appearance of partial or full transparency (usage omitted by default).
bars	logical: if TRUE (by default), error bars are added at each position.
length	a numeric value scaling the width of the bars.
at	a integer vector containing the x-positions corresponding to the columns of 'input'.

Author(s)

Bjoern Schwalb

See Also

[comparisonplot](), [demotour](), [disco](), [colorpalette]()

Examples

```
samples = 100
probes = 200
clus = matrix(rnorm(probes*samples,sd=1),ncol=probes)

clus = rbind(
t(t(clus)+sin(1:probes/10))+1:nrow(clus)/samples,
t(t(clus)+sin(pi/2+1:probes/10))+1:nrow(clus)/samples)

emptyplot(xlim = c(1,ncol(clus)),ylim = range(clus))
singlemsdplot(clus)
axis(1)
axis(2)
box()
```

---

webdesign   *Colored rectangular grid*

Description

Adds a colored rectangular grid to an existing plot.

Usage

```
webdesign(xlim, ylim, colpal = "rdbu", xlabels = NULL, ylabels = NULL, ...)
```

Arguments

`xlim`	x limits, standard graphics parameter.
`ylim`	y limits, standard graphics parameter.
`colpal`	a character vector containing R built-in color names or a name of a LSD color-palette as a character string (see disco() or [disco](#)).
`xlabels`	a character vector containing labels depicted parallel to the x-axis.
`ylabels`	a character vector containing labels depicted parallel to the y-axis.
`...`	additional parameters to be passed to abline().

Author(s)

Bjoern Schwalb

See Also

[demotour](#), [disco](#), [colorpalette](#)

Examples

```
emptyplot(c(-5,5),c(-5,5))
labels = c("2 fold","4 fold","8 fold")
webdesign(c(-5,5),c(-5,5),lty = 2,xlabels = labels,ylabels = labels)
```

---

windowxy	*Factorization of the number of windows for plots with device partitions*

Description

Create a factorization of the number of windows for plots with device partitions to be used in par(mfrow = ...).

Usage

```
windowxy(nrwin = 1)
```

Arguments

`nrwin`	a non-negative integer specifying the number of windows.

Author(s)

Bjoern Schwalb

See Also

[demotour](#)

Examples

```
windowxy(20)
```

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