Package 'predict3d'

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Type Package

Title Draw Three Dimensional Predict Plot Using Package 'rgl'

Version 0.1.5

URL https://github.com/cardiomoon/predict3d

BugReports https://github.com/cardiomoon/predict3d/issues

Description Draw 2 dimensional and three dimensional plot for multiple regression models using package 'ggplot2' and 'rgl'.
Supports linear models (lm), generalized linear models (glm) and local polynomial regression fittings (loess).

Depends R (>= 3.3.0)

License GPL-2

Encoding UTF-8

Imports ggplot2(>= 3.1.0), rgl(>= 1.0.1), dplyr, ggiraphExtra, modelr, purrr, rlang, stringr, magrittr, stats, reshape2, plyr, tidyr

RoxygenNote 7.3.1

Suggests moonBook, TH.data, knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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R topics documented:

`add_lines` *Add lines with labels to pre-existing ggplot*

Description

Add lines with labels to pre-existing ggplot

Usage

```
add_lines(
  p,
  df,
  xpos = 0.3,
  add.coord.fixed = TRUE,
  lty = NULL,
  color = NULL,
  size = 0.5,
  add_theme_bw2 = TRUE,
  ...
)
```

Arguments

p	An object of class ggplot
df	A data.frame. Required columns are slope, intercept and label
xpos	A numeric. Relative horizontal position
add.coord.fixed	Logical. Whether or not add coord_fixed() function
lty	line type
color	line color
size	line size
add_theme_bw2	logical Whether or not add theme_bw2()
...	Further arguments to be passed to geom_text

Examples

```
require(ggplot2)
fit=lm(mpg~wt*hp,data=mtcars)
df=calEquation(fit)
p=ggplot(data=mtcars,aes(x=wt,y=mpg))
add_lines(p,df)
add_lines(p,df,lty=1:3,color=1:3,size=1)
fit=lm(mpg~wt*vs,data=mtcars)
df=calEquation(fit)
p=ggplot(data=mtcars)+geom_point(aes(x=wt,y=mpg))
add_lines(p,df)
add_lines(p,df,lty=1:2,color=1:2,size=1)+theme_bw()
```

---

beNumeric *Whether a string vector can be converted to numeric*

Description

Whether a string vector can be converted to numeric

Usage

```
beNumeric(x)
```

Arguments

x	A string vector

Examples

```
x=c("age","22.5","11/2")
beNumeric(x)
```

`calEquation` *calculated slope and intercept from object of class lm*

Description

calculated slope and intercept from object of class lm

Usage

```
calEquation(
  fit,
  mode = 1,
  pred = NULL,
  modx = NULL,
  modx.values = NULL,
  label = NULL,
  maxylev = 6,
  digits = 2
)
```

Arguments

`fit`	An object of class lm
`mode`	A numeric
`pred`	name of predictor variable
`modx`	name of modifier variable
`modx.values`	Numeric. Values of modifier variable
`label`	A character string
`maxylev`	maximum length of unique value of variable to be treated as a categorial variable
`digits`	Integer indicating the number of decimal places

Examples

```
fit=lm(mpg~wt*hp+carb,data=mtcars)
calEquation(fit)
calEquation(fit,pred="hp")
```

expand.grid2 *expand.grid with two data.frames*

Description

expand.grid with two data.frames

Usage

```
expand.grid2(df1, df2)
```

Arguments

df1	A data.frame
df2	A data.frame

fit2newdata *Make a new data set for prediction*

Description

Make a new data set for prediction

Usage

```
fit2newdata(
  fit,
  predictors,
  mode = 1,
  pred.values = NULL,
  modx.values = NULL,
  mod2.values = NULL,
  colorn = 3,
  maxylev = 6,
  summarymode = 1
)
```

Arguments

fit	An object of class "lm", "glm" or "loess"
predictors	Names of predictor variables in string
mode	A numeric. Useful when the variables are numeric. If 1, c(-1,0,1)*sd + mean is used. If 2, the 16th, 50th, 84th percentile values used. If 3 sequence over a the range of a vector used

pred.values	For which values of the predictors should be used? Default is NULL. If NULL, 20 seq_range is used.
modx.values	For which values of the moderator should lines be plotted? Default is NULL. If NULL, then the customary +/- 1 standard deviation from the mean as well as the mean itself are used for continuous moderators. If the moderator is a factor variable and modx.values is NULL, each level of the factor is included.
mod2.values	For which values of the second moderator should lines be plotted? Default is NULL. If NULL, then the customary +/- 1 standard deviation from the mean as well as the mean itself are used for continuous moderators. If the moderator is a factor variable and modx.values is NULL, each level of the factor is included.
colorn	The number of regression lines when the modifier variable(s) are numeric.
maxylev	An integer indicating the maximum number of levels of numeric variable be treated as a categorical variable
summarymode	An integer indicating method of extracting typical value of variables. If 1, typical() is used.If 2, mean() is used.

Examples

```
fit=lm(mpg~hp*wt*cyl+carb+am,data=mtcars)
fit2newdata(fit,predictors=c("hp","wt","am"))
fit2newdata(fit,predictors=c("hp","wt","cyl"))
fit2newdata(fit,predictors=c("hp"))
fit2newdata(fit,predictors=c("hp","wt"))
fit=loess(mpg~hp*wt*am,data=mtcars)
fit2newdata(fit,predictors=c("hp"))
## Not run:
mtcars$engine=ifelse(mtcars$vs==0,"V-shaped","straight")
fit=lm(mpg~wt*engine,data=mtcars)
fit2newdata(fit,predictors=c("wt","engine"))
fit=lm(mpg~wt*factor(vs),data=mtcars)
fit2newdata(fit,predictors=c("wt","vs"))
fit2newdata(lm(mpg~hp*wt,data=mtcars),predictors=c("hp","wt"),mode=3,colorn=30)
fit=lm(mpg~hp*log(wt),data=mtcars)
fit2newdata(fit,predictors=c("hp","log(wt)"))
fit=lm(mpg~hp*wt*factor(vs),data=mtcars)
fit2newdata(fit,predictors=c("hp"))

## End(Not run)
require(moonBook)
fit=lm(log(NTAV)~I(age^2)*sex,data=radial)
fit2newdata(fit,predictors=c("I(age^2)","sex"))
```

---

getAspectRatio *Get aspect information of a ggplot*

Description

Get aspect information of a ggplot

Usage

```
getAspectRatio(p)
```

Arguments

p	A ggplot object

---

getMeans *calculate mean values of two consecutive number*

Description

calculate mean values of two consecutive number

Usage

```
getMeans(x)
```

Arguments

x	A numeric vector

Examples

```
x=c(50,60,70)
getMeans(x)
```

---

getNewFormula *Make new formula*

Description

Make new formula

Usage

```
getNewFormula(fit, predictors = NULL)
```

Arguments

fit	An object of class lm or glm
predictors	Names of variables to exclude

Examples

```
fit=lm(mpg~factor(cyl)*factor(am)+wt+carb,data=mtcars)
getNewFormula(fit,predictors=c("cyl","wt"))
fit=lm(Sepal.Length~Sepal.Width*Petal.Length+Species,data=iris)
getNewFormula(fit,predictors=c("Petal.Length"))
fit=lm(mpg~hp*wt*factor(cyl),data=mtcars)
getNewFormula(fit,predictors=c("hp","cyl"))
fit=loess(mpg~hp*wt,data=mtcars)
getNewFormula(fit,predictors=c("hp","wt"))
```

`ggPredict` *Visualize predictions from the multiple regression models.*

Description

Visualize predictions from the multiple regression models.

Usage

```
ggPredict(
  fit,
  pred = NULL,
  modx = NULL,
  mod2 = NULL,
  modx.values = NULL,
  mod2.values = NULL,
  dep = NULL,
  mode = 1,
  colorn = 3,
  maxylev = 6,
  show.point = getOption("ggPredict.show.point", TRUE),
  show.error = FALSE,
  error.color = "red",
  jitter = NULL,
  se = FALSE,
  alpha = 0.1,
  show.text = TRUE,
  add.modx.values = TRUE,
  add.loess = FALSE,
  labels = NULL,
  angle = NULL,
  xpos = NULL,
  vjust = NULL,
  digits = 2,
  facet.modx = FALSE,
  facetbycol = TRUE,
  plot = TRUE,
```

```
  summarymode = 1,
  ...
)
```

Arguments

fit	An object of class "lm" or "glm"
pred	The name of predictor variable
modx	Optional. The name of moderator variable
mod2	Optional. The name of second moderator variable
modx.values	For which values of the moderator should lines be plotted? Default is NULL. If NULL, then the customary +/- 1 standard deviation from the mean as well as the mean itself are used for continuous moderators. If the moderator is a factor variable and modx.values is NULL, each level of the factor is included.
mod2.values	For which values of the second moderator should lines be plotted? Default is NULL. If NULL, then the customary +/- 1 standard deviation from the mean as well as the mean itself are used for continuous moderators. If the moderator is a factor variable and modx.values is NULL, each level of the factor is included.
dep	Optional. The name of dependent variable
mode	A numeric. Useful when the variables are numeric. If 1, c(-1,0,1)*sd + mean is used. If 2, the 14th, 50th, 86th percentile values used. If 3 sequence over a the range of a vector used
colorn	The number of regression lines when the modifier variable(s) are numeric.
maxylev	An integer indicating the maximum number of levels of numeric variable be treated as a categorical variable
show.point	Logical. Whether or not add points
show.error	Logical. Whether or not show error
error.color	color of error. dafault value is "red"
jitter	logical Whether or not use geom_jitter
se	Logical. Whether or not add confidence interval
alpha	A numeric. Transparency
show.text	Logical. Whether or not add regression equation as label
add.modx.values	Logical. Whether or not add moderator values to regression equation
add.loess	Logical. Whether or not add loess line
labels	labels on regression lines
angle	angle of text
xpos	x axis position of label
vjust	vertical alignment of labels
digits	integer indicating the number of decimal places
facet.modx	Create separate panels for each level of the moderator? Default is FALSE

facetbycol	Logical.
plot	Logical. Should a plot of the results be printed? Default is TRUE.
summarymode	An integer indicating method of extracting typical value of variables. If 1, typical() is used.If 2, mean() is used.
...	additional arguments to be passed to geom_text

Examples

```
fit=loess(mpg~hp*wt*am,data=mtcars)
ggPredict(fit)
ggPredict(fit,hp)
## Not run:
ggPredict(fit,hp,wt)
fit=lm(mpg~wt*hp-1,data=mtcars)
ggPredict(fit,xpos=0.7)
fit=lm(mpg~hp*wt,data=mtcars)
ggPredict(fit)
ggPredict(fit,labels=paste0("label",1:3),xpos=c(0.3,0.6,0.4))
ggPredict(fit,se=TRUE)
ggPredict(fit,mode=3,colorn=40,show.text=FALSE)
fit=lm(log(mpg)~hp*wt,data=mtcars)
ggPredict(fit,dep=mpg)
fit=lm(mpg~hp*wt*cyl,data=mtcars)
ggPredict(fit,modx=wt,modx.values=c(2,3,4,5),mod2=cyl,show.text=FALSE)
ggPredict(fit,hp,wt,show.point=FALSE,se=TRUE,xpos=0.5)
ggPredict(fit,modx=wt,xpos=0.3)
ggPredict(fit)
mtcars$engine=ifelse(mtcars$vs==0,"V-shaped","straight")
fit=lm(mpg~wt*engine,data=mtcars)
ggPredict(fit)
require(TH.data)
fit=glm(cens~pnodes*horTh,data=GBSG2,family=binomial)
ggPredict(fit,pnodes,horTh,se=TRUE,xpos=c(0.6,0.3),angle=c(40,60),vjust=c(2,-0.5))
fit1=glm(cens~pnodes,data=GBSG2,family=binomial)
ggPredict(fit1,vjust=1.5,angle=45)
fit3=glm(cens~pnodes*age,data=GBSG2,family=binomial)
ggPredict(fit3,pred=pnodes,modx=age,mode=3,colorn=10,show.text=FALSE)
fit2=glm(cens~pnodes*age*horTh,data=GBSG2,family=binomial)
ggPredict(fit2,pred=pnodes,modx=age,mod2=horTh,mode=3,colorn=10,show.text=FALSE)
fit=lm(mpg~log(hp)*wt,data=mtcars)
ggPredict(fit,hp,wt)
fit=lm(mpg~hp*wt+disp+gear+carb+am,data=mtcars)
ggPredict(fit,disp,gear,am)
library(moonBook)
fit=lm(weight~I(height^3)+I(height^2)+height+sex,data=radial)
ggPredict(fit)
predict3d(fit)

## End(Not run)
```

gg_color_hue *Pick default color*

Description

Pick default color

Usage

```
gg_color_hue(n)
```

Arguments

n	An integer

is.mynumeric *Decide whether a vector can be treated as a numeric variable*

Description

Decide whether a vector can be treated as a numeric variable

Usage

```
is.mynumeric(x, maxylev = 6)
```

Arguments

x	A vector
maxylev	An integer indicating the maximum number of levels of numeric variable be treated as a categorical variable

myseq *Generate regular sequences of desired length between minimum and maximal values*

Description

Generate regular sequences of desired length between minimum and maximal values

Usage

```
myseq(x, length = 20)
```

Arguments

x	a numeric vector
length	desired length of the sequence

number2group *Convert a numeric vector into groups*

Description

Convert a numeric vector into groups

Usage

```
number2group(
  x,
  mode = 1,
  values = NULL,
  silent = FALSE,
  label = "label",
  digits = 2,
  colorn = 3
)
```

Arguments

x	A numeric vector
mode	A numeric. If 1, mean(x) +c(-1,0,1)*sd(x) are used. If 2, quantile(x,probs=c(0.14,0.5,0.86),type=6) are used. If 3, values are used
values	A numeric vector
silent	A logical. Whether table of result will be shown
label	A character string
digits	integer indicating the number of decimal places
colorn	The number of regression lines when the modifier variable(s) are numeric

Examples

```
number2group(iris$Sepal.Length,label="Sepal.Length")
x=number2group(mtcars$wt,label="wt")
x
```

---

predict3d *Draw 3d predict plot using package 'rgl'*

Description

Draw 3d predict plot using package 'rgl'

Usage

```
predict3d(
  fit,
  pred = NULL,
  modx = NULL,
  mod2 = NULL,
  dep = NULL,
  xlab = NULL,
  ylab = NULL,
  zlab = NULL,
  width = 640,
  colorn = 20,
  maxylev = 6,
  se = FALSE,
  show.summary = FALSE,
  overlay = NULL,
  show.error = FALSE,
  show.legend = FALSE,
  bg = NULL,
  type = "s",
  radius = NULL,
  palette = NULL,
  palette.reverse = TRUE,
  color = "red",
  show.subtitle = TRUE,
  show.plane = TRUE,
  plane.color = "steelblue",
  plane.alpha = 0.5,
  summarymode = 1,
  ...
)
```

Arguments

fit	A model object for which prediction is desired.
pred	The name of predictor variable
modx	Optional. The name of moderator variable
mod2	Optional. The name of second moderator variable
dep	Optional. The name of dependent variable
xlab	x-axis label.
ylab	y-axis label.
zlab	z-axis label.
width	the width of device
colorn	An integer giving the desired number of intervals. Non-integer values are rounded down.
maxylev	Maximal length of unique values of y axis variable to be treated as a categorical variable.
se	Logical. Whether or not show se. Only effective when the y-axis variable is a categorical one.
show.summary	Logical. Whether or not show statistical summary
overlay	Logical. Whether or not overlay plots
show.error	Logical. Whether or not show error
show.legend	Logical. Whether or not show legend
bg	Character. Background color of plot
type	For the default method, a single character indicating the type of item to plot. Supported types are: 'p' for points, 's' for spheres, 'l' for lines, 'h' for line segments from z = 0, and 'n' for nothing. For the mesh3d method, one of 'shade', 'wire', or 'dots'. Partial matching is used.
radius	The size of sphere
palette	Name of color palette
palette.reverse	Logical. Whether or not reverse the palette order
color	Default color. Color is used when the palette is NULL
show.subtitle	Logical. If true, show regression call as subtitle
show.plane	Logical. If true, show regression plane
plane.color	Name of color of regression plane
plane.alpha	Transparency scale of regression plane
summarymode	An integer indicating method of extracting typical value of variables. If 1, typical() is used.If 2, mean() is used.
...	additional parameters which will be passed to plot3d

Examples

```
fit=lm(mpg~hp*wt,data=mtcars)
predict3d(fit,show.error=TRUE)
fit=lm(log(mpg)~hp*wt,data=mtcars)
predict3d(fit,dep=mpg)
## Not run:
fit=lm(Sepal.Length~Sepal.Width*Species,data=iris)
predict3d(fit)
require(TH.data)
fit=glm(cens~pnodes*age*horTh,data=GBSG2,family=binomial)
predict3d(fit)
mtcars$engine=ifelse(mtcars$vs==0,"V-shaped","straight")
fit=lm(mpg~wt*engine,data=mtcars)
predict3d(fit)
fit=loess(mpg~hp*wt,data=mtcars)
predict3d(fit,radius=4)
states<-as.data.frame(state.x77[,c("Murder","Population","Illiteracy","Income","Frost")])
fit=lm(Murder~Population+Illiteracy,data=states)
predict3d(fit)
predict3d(fit,radius=200)
fit=lm(mpg~cyl+hp+am,data=mtcars)
predict3d(fit)

## End(Not run)
```

---

rank2colors *Rank a numeric vector using proportional table and returns character vector of names of color using palette*

Description

Rank a numeric vector using proportional table and returns character vector of names of color using palette

Usage

```
rank2colors(x, palette = "Blues", reverse = TRUE, color = "red")
```

Arguments

x	A numeric vector
palette	Name of the color palette
reverse	Logical. Whether or not reverse the order of the color palette
color	Default color when palette is NULL

Examples

```
rank2colors(mtcars$wt,palette="Blues")
```

rank2group2 *Rank a numeric vector using proportional table and returns a new ordinal vector*

Description

Rank a numeric vector using proportional table and returns a new ordinal vector

Usage

```
rank2group2(x, k = 4)
```

Arguments

x	a numeric vector
k	a integer specifies how many groups you want to classify. default value is 4

restoreData *Restore factors in data.frame as numeric*

Description

Restore factors in data.frame as numeric

Usage

```
restoreData(data)
```

Arguments

data	A data.frame

Examples

```
fit=lm(mpg~factor(cyl)*factor(am),data=mtcars)
fit=lm(mpg~wt*factor(am),data=mtcars)
fit=lm(mpg~wt*hp,data=mtcars)
restoreData(fit$model)
```

restoreData2 *restore data column with I() function*

Description

restore data column with I() function

Usage

```
restoreData2(df)
```

Arguments

df	A data.frame

Examples

```
fit=lm(mpg~I(cyl^(1/2))*am,data=mtcars)
restoreData2(fit$model)
fit=lm(mpg~sqrt(hp)*log(wt)*am,data=mtcars)
restoreData2(fit$model)
```

restoreData3 *Restore data from arithmetic operator*

Description

Restore data from arithmetic operator

Usage

```
restoreData3(df, changeLabel = FALSE)
```

Arguments

df	A data.frame
changeLabel	logical

Examples

```
fit=lm(2^mpg~hp*wt,data=mtcars)
summary(fit)
restoreData3(fit$model)
```

restoreNames *Restore factors in variable name as numeric*

Description

Restore factors in variable name as numeric

Usage

```
restoreNames(x)
```

Arguments

x	character vector

Examples

```
restoreNames(c("factor(cyl)","am"))
restoreNames(c("I(age^2)","am","100/mpg","cyl^1/2","mpg2","sex + 0.5"))
```

revOperator *get opposite arithmetic operator*

Description

get opposite arithmetic operator

Usage

```
revOperator(operator)
```

Arguments

operator	A character

seekNamesDf *Find variable names in data.frame*

Description

Find variable names in data.frame

Usage

```
seekNamesDf(vars, df)
```

Arguments

vars	variable names to find
df	A data.frame

Value

A character vector

seq_range *Create a sequence over the range of a vector*

Description

Create a sequence over the range of a vector

Usage

```
seq_range(x, n = 2)
```

Arguments

x	A numeric vector
n	An integer specifying the length of sequence (i.e., number of points across the range of x)

Examples

```
seq_range(1:5,n=3)
```

`slope2angle` *Make angle data with slope data*

Description

Make angle data with slope data

Usage

```
slope2angle(
  df,
  fit,
  ytransform = 0,
  predc,
  temppredc,
  modxc,
  yvar,
  p,
  method = "lm",
  xpos = NULL,
  vjust = NULL,
  digits = 3,
  facetno = NULL,
  add.modx.values = TRUE
)
```

Arguments

`df`	A data.frame
`fit`	An object of class "lm" or "glm"
`ytransform`	Numeric. If 1, log transformation of dependent variable, If -1, exponential transformation
`predc`	Name of predictor variable
`temppredc`	Name of predictor variable in regression equation
`modxc`	Name of moderator variable
`yvar`	Name of dependent variable
`p`	An object of class ggplot
`method`	String. Choices are one of "lm" and "glm".
`xpos`	The relative x-axis position of labels. Should be within 0 to 1
`vjust`	vjust
`digits`	integer indicating the number of decimal places
`facetno`	The number of facets
`add.modx.values`	Whether add name of moderator variable

string2pattern *change string to pattern*

Description

change string to pattern

Usage

```
string2pattern(string)
```

Arguments

string	A character vector

Examples

```
string=c("I(age^2)","factor(cyl)","log(mpg)")
string2pattern(string)
```

theme_bw2 *theme_bw with no grid*

Description

theme_bw with no grid

Usage

```
theme_bw2()
```

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