Package 'coefplot'

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Type Package

Title Plots Coefficients from Fitted Models

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Description Plots the coefficients from model objects. This very quickly shows the user the point estimates and confidence intervals for fitted models.

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LazyLoad yes

Depends ggplot2 (>= 2.0.0)

Imports plyr, reshape2, useful, stats, dplyr (>= 0.6.0), dygraphs, tibble, magrittr, purrr, plotly

ByteCompile TRUE

Suggests testthat (>= 2.0.0), covr, glmnet, maxLik, xgboost, workflows, parsnip, knitr, rmarkdown

Encoding UTF-8

RoxygenNote 7.1.2

NeedsCompilation no

Repository CRAN

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R topics documented:

`annotateSeries` *annotateSeries*

Description

Annotate a series

Usage

```
annotateSeries(
  dygraph,
  series,
  x = 0,
  text = series,
  tooltip = series,
  width = 50,
```

```
  ...
)
```

Arguments

dygraph	Dygraph to add an annotation to
series	Series to attach the annotation to. By default, the last series defined using dySeries.
x	Either numeric or date value indicating where to place the annotation. For date value, this should be of class POSIXct or convertible to POSIXct.
text	Text to overlay on the chart at the location of x
tooltip	Additional tooltip text to display on mouse hover
width	Width (in pixels) of the annotation flag.
...	Further arguments passed to link[dygraphs]{dyAnnotation}

Details

A helper function that changes the order of some options for link[dygraphs]{dyAnnotation} so it is easier to use with reduce.

Author(s)

Jared P. Lander

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buildModelCI *buildModelCI*

Description

Construct Confidence Interval Values

Usage

```
buildModelCI(model, ...)
```

Arguments

model	A Fitted model such as from lm, glm
...	Arguments passed on onto other methods

Details

Takes a model and builds a data.frame holding the coefficient value and the confidence interval values.

Value

A data.frame listing coefficients and confidence bands.

Author(s)

Jared P. Lander

See Also

coefplot multiplot

Examples

```
data(diamonds)
model1 <- lm(price ~ carat + cut, data=diamonds)
coefplot:::buildModelCI(model1)
coefplot(model1)
```

---

buildModelCI.default *buildModelCI.default*

Description

Construct Confidence Interval Values

Usage

```
## Default S3 method:
buildModelCI(
  model,
  outerCI = 2,
  innerCI = 1,
  intercept = TRUE,
  numeric = FALSE,
  sort = c("natural", "magnitude", "alphabetical"),
  predictors = NULL,
  strict = FALSE,
  coefficients = NULL,
  newNames = NULL,
  trans = identity,
  decreasing = TRUE,
  name = NULL,
  interceptName = "(Intercept)",
  ...
)
```

Arguments

model	A Fitted model such as from lm, glm
outerCI	How wide the outer confidence interval should be, normally 2 standard deviations. If 0, then there will be no outer confidence interval.
innerCI	How wide the inner confidence interval should be, normally 1 standard deviation. If 0, then there will be no inner confidence interval.
intercept	logical; Whether the Intercept coefficient should be plotted
numeric	logical; If true and factors has exactly one value, then it is displayed in a horizontal graph with continuous confidence bounds.; not used for now.
sort	Determines the sort order of the coefficients. Possible values are c("natural", "magnitude", "alphabetical")
predictors	A character vector specifying which variables to keep. Each individual variable has to be specified, so individual levels of factors must be specified. We are working on making this easier to implement, but this is the only option for now.
strict	If TRUE then predictors will only be matched to its own coefficients, not its interactions
coefficients	A character vector specifying which factor variables to keep. It will keep all levels and any interactions, even if those are not listed.
newNames	Named character vector of new names for coefficients
trans	A transformation function to apply to the values and confidence intervals. `identity` by default. Use `invlogit` for binary regression.
decreasing	logical; Whether the coefficients should be ascending or descending
name	A name for the model, if NULL the call will be used
interceptName	Specifies name of intercept it case it is not the default of "(Intercept").
...	See Details for information on `factors`, `only` and `shorten`

Details

Takes a model and builds a data.frame holding the coefficient value and the confidence interval values.

Value

A `data.frame` listing coefficients and confidence bands.

Author(s)

Jared P. Lander

See Also

`coefplot` `multiplot`

Examples

```
data(diamonds, package='ggplot2')
model1 <- lm(price ~ carat + cut, data=diamonds)
coefplot:::buildModelCI(model1)
coefplot(model1)
```

`buildPlotting.default` *Coefplot plotting*

Description

Build ggplot object for coefplot

Usage

```
buildPlotting.default(
  modelCI,
  title = "Coefficient Plot",
  xlab = "Value",
  ylab = "Coefficient",
  lwdInner = 1 + interactive * 2,
 lwdOuter = if (interactive) 1 else unname((Sys.info()["sysname"] != "Windows") * 0.5),
  pointSize = 3 + interactive * 5,
  color = "blue",
  cex = 0.8,
  textAngle = 0,
  numberAngle = 0,
  shape = 16,
  linetype = 1,
  outerCI = 2,
  innerCI = 1,
  multi = FALSE,
  zeroColor = "grey",
  zeroLWD = 1,
  zeroType = 2,
  numeric = FALSE,
  fillColor = "grey",
  alpha = 1/2,
  horizontal = FALSE,
  facet = FALSE,
  scales = "free",
  value = "Value",
  coefficient = "Coefficient",
  errorHeight = 0,
  dodgeHeight = 1,
```

```
  interactive = FALSE
)
```

Arguments

modelCI	An object created by buildModelCI
title	The name of the plot, if NULL then no name is given
xlab	The x label
ylab	The y label
lwdInner	The thickness of the inner confidence interval
lwdOuter	The thickness of the outer confidence interval
pointSize	Size of coefficient point
color	The color of the points and lines
cex	The text size multiplier, currently not used
textAngle	The angle for the coefficient labels, 0 is horizontal
numberAngle	The angle for the value labels, 0 is horizontal
shape	The shape of the points
linetype	The linetype of the error bars
outerCI	How wide the outer confidence interval should be, normally 2 standard deviations. If 0, then there will be no outer confidence interval.
innerCI	How wide the inner confidence interval should be, normally 1 standard deviation. If 0, then there will be no inner confidence interval.
multi	logical; If this is for multiplot then leave the colors as determined by the legend, if FALSE then make all colors the same
zeroColor	The color of the line indicating 0
zeroLWD	The thickness of the 0 line
zeroType	The type of 0 line, 0 will mean no line
numeric	logical; If true and factors has exactly one value, then it is displayed in a horizontal graph with continuous confidence bounds.
fillColor	The color of the confidence bounds for a numeric factor
alpha	The transparency level of the numeric factor's confidence bound
horizontal	logical; If the plot should be displayed horizontally
facet	logical; If the coefficients should be faceted by the variables, numeric coefficients (including the intercept) will be one facet
scales	The way the axes should be treated in a faceted plot. Can be c("fixed", "free", "free_x", "free_y")
value	Name of variable for value metric
coefficient	Name of variable for coefficient names
errorHeight	Height of error bars
dodgeHeight	Amount of vertical dodging
interactive	If TRUE an interactive plot is generated instead of [ggplot2]

Details

This function builds up the ggplot layer by layer for coefplot.lm

Value

a ggplot graph object

Author(s)

Jared P. Lander www.jaredlander.com

See Also

coefplot.default coefplot multiplot

Examples

```
data(diamonds)
model1 <- lm(price ~ carat + cut, data=diamonds)
theCI <- coefplot:::buildModelCI(model1)
coefplot:::buildPlotting.default(theCI)
coefplot(model1)
```

---

buildPlottingPloty.default
buildPlottingPloty.default

Description

Builds the plotting structure for interactive coefplots

Usage

```
buildPlottingPloty.default(
  modelCI,
  title = "Coefficient Plot",
  xlab = "Value",
  ylab = "Coefficient",
  lwdInner = 3,
  lwdOuter = 1,
  color = "blue",
  shape = "circle",
  pointSize = 8
)
```

Arguments

modelCI	An object created by buildModelCI
title	The name of the plot, if NULL then no name is given
xlab	The x label
ylab	The y label
lwdInner	The thickness of the inner confidence interval
lwdOuter	The thickness of the outer confidence interval
color	The color of the points and lines
shape	The shape of the points
pointSize	Size of coefficient point

Details

Uses plotly to make an interactive version of coefplot. Still uses modelCI.

Value

a ggplot graph object

Author(s)

Jared P. Lander

See Also

coefplot.default coefplot buildPlotting.default

Examples

```
data(diamonds)
mod1 <- lm(price ~ carat + cut, data=diamonds)
theCI1 <- coefplot:::buildModelCI(mod1)
coefplot:::buildPlottingPloty.default(theCI1)
coefplot(mod1, interactive=TRUE)
mod2 <- lm(mpg ~ cyl + qsec - 1, data=mtcars)
mod3 <- lm(mpg ~ cyl + qsec + disp - 1, data=mtcars)
theCI2 <- coefplot:::buildModelCI(mod2)
theCI3 <- coefplot:::buildModelCI(mod3)
coefplot::buildPlottingPloty.default(theCI2)
coefplot::buildPlottingPloty.default(theCI3)
coefplot(mod2, interactive=TRUE)
coefplot(mod3, interactive=TRUE)

mod4 <- glmnet::glmnet(
x=as.matrix(diamonds[, c('carat', 'x', 'y', 'z')]),
y=diamonds$price
)
```

```
coefplot(mod4, interactive=TRUE, lambda=0.65)
```

---

coefpath *coefpath*

Description

Visualize the coefficient path resulting from the elastic net

Usage

```
coefpath(model, ...)

## S3 method for class 'glmnet'
coefpath(
  model,
  xlab = "Log Lambda",
  ylab = "Coefficients",
  showLegend = c("onmouseover", "auto", "always", "follow", "never"),
  annotate = TRUE,
  elementID = NULL,
  ...
)

## S3 method for class 'cv.glmnet'
coefpath(
  model,
  xlab = "Log Lambda",
  ylab = "Coefficients",
  showLegend = c("onmouseover", "auto", "always", "follow", "never"),
  annotate = TRUE,
  colorMin = "black",
  strokePatternMin = "dotted",
  labelMin = "lambda.min",
  locMin = c("bottom", "top"),
  color1se = "black",
  strokePattern1se = "dotted",
  label1se = "lambda.1se",
  loc1se = c("bottom", "top"),
  ...
)
```

Arguments

model	A glmnet model
...	Arguments passed on to extractPath

xlab	x-axis label
ylab	y-axis label
showLegend	When to display the legend. Specify "always" to always show the legend. Specify "onmouseover" to only display it when a user mouses over the chart. Specify "follow" to have the legend show as overlay to the chart which follows the mouse. The default behavior is "auto", which results in "always" when more than one series is plotted and "onmouseover" when only a single series is plotted.
annotate	If TRUE (default) plot the name of the series
elementID	Unique identified for dygraph, if NULL it will be randomly generated
colorMin	Color for line showing lambda.min
strokePatternMin	Stroke pattern for line showing lambda.min
labelMin	Label for line showing lambda.min
locMin	Location for line showing lambda.min, can be 'bottom' or 'top'
color1se	Color for line showing lambda.1se
strokePattern1se	Stroke pattern for line showing lambda.1se
label1se	Label for line showing lambda.1se
loc1se	Location for line showing lambda.1se, can be 'bottom' or 'top'

Details

This is a replacement plot for visualizing the coefficient path resulting from the elastic net. This allows for interactively inspecting the plot so it is easier to disambiguate the coefficients.

Value

A dygraphs object

Author(s)

Jared P. Lander

Examples

```
library(glmnet)
library(ggplot2)
library(useful)
data(diamonds)
diaX <- useful::build.x(price ~ carat + cut + x - 1, data=diamonds, contrasts = TRUE)
diaY <- useful::build.y(price ~ carat + cut + x - 1, data=diamonds)
modG1 <- glmnet(x=diaX, y=diaY)
coefpath(modG1)
```

```
modG2 <- cv.glmnet(x=diaX, y=diaY, nfolds=5)
coefpath(modG2)

x <- matrix(rnorm(100*20),100,20)
y <- rnorm(100)
fit1 <- glmnet(x, y)
coefpath(fit1)
```

`coefplot` *Plotting Model Coefficients*

Description

Provides an S3 generic method for plotting coefficients from a model so it can be extended to other model types.

A graphical display of the coefficients and standard errors from a fitted model

`coefplot` is the S3 generic method for plotting the coefficients from a fitted model.

This can be extended with new methods for other types of models not currently available.

Coefplot method for workflow objects

Coefplot method for parsnip objects

Usage

```
coefplot(model, ...)

## Default S3 method:
coefplot(
  model,
  title = "Coefficient Plot",
  xlab = "Value",
  ylab = "Coefficient",
  innerCI = 1,
  outerCI = 2,
  lwdInner = 1 + interactive * 2,
 lwdOuter = if (interactive) 1 else unname((Sys.info()["sysname"] != "Windows") * 0.5),
  pointSize = 3 + interactive * 5,
  color = "blue",
  shape = 16,
  cex = 0.8,
  textAngle = 0,
  numberAngle = 0,
  zeroColor = "grey",
  zeroLWD = 1,
  zeroType = 2,
```

```
  facet = FALSE,
  scales = "free",
  sort = c("natural", "magnitude", "alphabetical"),
  decreasing = FALSE,
  numeric = FALSE,
  fillColor = "grey",
  alpha = 1/2,
  horizontal = FALSE,
  factors = NULL,
  only = NULL,
  shorten = TRUE,
  intercept = TRUE,
  interceptName = "(Intercept)",
  coefficients = NULL,
  predictors = NULL,
  strict = FALSE,
  trans = identity,
  interactive = FALSE,
  newNames = NULL,
  plot = TRUE,
  ...
)

## S3 method for class 'lm'
coefplot(...)

## S3 method for class 'glm'
coefplot(...)

## S3 method for class 'workflow'
coefplot(model, ...)

## S3 method for class 'model_fit'
coefplot(model, ...)

## S3 method for class 'rxGlm'
coefplot(...)

## S3 method for class 'rxLinMod'
coefplot(...)

## S3 method for class 'rxLogit'
coefplot(...)
```

Arguments

model	A parsnip object
...	All arguments are passed on to coefplot.lm. Please see that function for argu-

	ment information.
title	The name of the plot, if NULL then no name is given
xlab	The x label
ylab	The y label
innerCI	How wide the inner confidence interval should be, normally 1 standard deviation. If 0, then there will be no inner confidence interval.
outerCI	How wide the outer confidence interval should be, normally 2 standard deviations. If 0, then there will be no outer confidence interval.
lwdInner	The thickness of the inner confidence interval
lwdOuter	The thickness of the outer confidence interval
pointSize	Size of coefficient point
color	The color of the points and lines
shape	The shape of the points
cex	The text size multiplier, currently not used
textAngle	The angle for the coefficient labels, 0 is horizontal
numberAngle	The angle for the value labels, 0 is horizontal
zeroColor	The color of the line indicating 0
zeroLWD	The thickness of the 0 line
zeroType	The type of 0 line, 0 will mean no line
facet	logical; If the coefficients should be faceted by the variables, numeric coefficients (including the intercept) will be one facet. Currently not available.
scales	The way the axes should be treated in a faceted plot. Can be c("fixed", "free", "free_x", "free_y"). Currently not available.
sort	Determines the sort order of the coefficients. Possible values are c("natural", "magnitude", "alphabetical")
decreasing	logical; Whether the coefficients should be ascending or descending
numeric	logical; If true and factors has exactly one value, then it is displayed in a horizontal graph with continuous confidence bounds. Currently not available.
fillColor	The color of the confidence bounds for a numeric factor. Currently not available.
alpha	The transparency level of the numeric factor's confidence bound. Currently not available.
horizontal	logical; If the plot should be displayed horizontally. Currently not available.
factors	Vector of factor variables that will be the only ones shown
only	logical; If factors has a value this determines how interactions are treated. True means just that variable will be shown and not its interactions. False means interactions will be included.
shorten	logical or character; If FALSE then coefficients for factor levels will include their variable name. If TRUE coefficients for factor levels will be stripped of their variable names. If a character vector of variables only coefficients for factor levels associated with those variables will the variable names stripped. Currently not available.

intercept	logical; Whether the Intercept coefficient should be plotted
interceptName	Specifies name of intercept it case it is not the default of "(Intercept").
coefficients	A character vector specifying which factor coefficients to keep. It will keep all levels and any interactions, even if those are not listed.
predictors	A character vector specifying which coefficients to keep. Each individual coefficient can be specified. Use predictors to specify entire factors.
strict	If TRUE then predictors will only be matched to its own coefficients, not its interactions
trans	A transformation function to apply to the values and confidence intervals. identity by default. Use invlogit for binary regression.
interactive	If TRUE an interactive plot is generated instead of ggplot2
newNames	Named character vector of new names for coefficients
plot	logical; If the plot should be drawn, if false then a data.frame of the values will be returned

Details

Currently, methods are available for lm, glm and rxLinMod objects.

For more information on this function and it's arguments see coefplot.default

Pulls model element out of workflow object then calls coefplot.

Pulls model element out of parsnip object then calls coefplot.

Value

A ggplot2 object or data.frame. See details in coefplot.lm for more information

If plot is TRUE then a ggplot object is returned. Otherwise a data.frame listing coefficients and confidence bands is returned.

A ggplot object. See coefplot.lm for more information.

A ggplot object. See coefplot.lm for more information.

A ggplot object. See coefplot.lm for more information.

Methods (by class)

- default: Default method
- lm: lm
- glm: glm
- workflow: tidymodels workflows
- model_fit: parsnip
- rxGlm: rxGlm
- rxLinMod: rxLinMod
- rxLogit: rxLogit

Author(s)

Jared P. Lander

See Also

coefplot.lm coefplot.data.frame

lm glm ggplot coefplot plotcoef

Examples

```
data(diamonds)
head(diamonds)
model1 <- lm(price ~ carat + cut*color, data=diamonds)
model2 <- lm(price ~ carat*color, data=diamonds)
model3 <- glm(price > 10000 ~ carat*color, data=diamonds)
coefplot(model1)
coefplot(model2)
coefplot(model3)
coefplot(model1, predictors="color")
coefplot(model1, predictors="color", strict=TRUE)
coefplot(model1, coefficients=c("(Intercept)", "color.Q"))
coefplot(model1, predictors="cut", coefficients=c("(Intercept)", "color.Q"), strict=TRUE)
coefplot(model1, predictors="cut", coefficients=c("(Intercept)", "color.Q"), strict=FALSE)
coefplot(model1, predictors="cut", coefficients=c("(Intercept)", "color.Q"),
strict=TRUE, newNames=c(color.Q="Color", "cut^4"="Fourth"))
coefplot(model1, predictors=c("(Intercept)", "carat"), newNames=c(carat="Size"))
coefplot(model1, predictors=c("(Intercept)", "carat"),
newNames=c(carat="Size", "(Intercept)"="Constant"))


data(diamonds)
head(diamonds)
model1 <- lm(price ~ carat + cut*color, data=diamonds)
model2 <- lm(price ~ carat*color, data=diamonds)
coefplot(model1)
coefplot(model2)
coefplot(model1, predictors="color")
coefplot(model1, predictors="color", strict=TRUE)
coefplot(model1, coefficients=c("(Intercept)", "color.Q"))


model1 <- lm(price ~ carat + cut*color, data=diamonds)
coefplot(model1)

model2 <- glm(price > 10000 ~ carat + cut*color, data=diamonds, family=binomial(link="logit"))
coefplot(model2)
coefplot(model2, trans=invlogit)

## Not run:
mod4 <- rxGlm(price ~ carat + cut + x, data=diamonds)
mod5 <- rxGlm(price > 10000 ~ carat + cut + x, data=diamonds, family="binomial")
```

```
coefplot(mod4)
coefplot(mod5)

## End(Not run)


## Not run:
data(diamonds)
mod3 <- rxLinMod(price ~ carat + cut + x, data=diamonds)
coefplot(mod3)

## End(Not run)

## Not run:
data(diamonds)
mod6 <- rxLogit(price > 10000 ~ carat + cut + x, data=diamonds)
coefplot(mod6)

## End(Not run)
```

`coefplot.data.frame` *coefplot.data.frame*

Description

Dotplot for coefficients

Usage

```
## S3 method for class 'data.frame'
coefplot(
  model,
  title = "Coefficient Plot",
  xlab = "Value",
  ylab = "Coefficient",
  interactive = FALSE,
  lwdInner = 1 + interactive * 2,
 lwdOuter = if (interactive) 1 else unname((Sys.info()["sysname"] != "Windows") * 0.5),
  pointSize = 3 + interactive * 5,
  color = "blue",
  cex = 0.8,
  textAngle = 0,
  numberAngle = 0,
  shape = 16,
  linetype = 1,
  outerCI = 2,
  innerCI = 1,
  multi = FALSE,
```

```
  zeroColor = "grey",
  zeroLWD = 1,
  zeroType = 2,
  numeric = FALSE,
  fillColor = "grey",
  alpha = 1/2,
  horizontal = FALSE,
  facet = FALSE,
  scales = "free",
  value = "Value",
  coefficient = "Coefficient",
  errorHeight = 0,
  dodgeHeight = 1,
  ...
)
```

Arguments

model	A data.frame like that built from coefplot(..., plot=FALSE)
title	The name of the plot, if NULL then no name is given
xlab	The x label
ylab	The y label
interactive	If 'TRUE' an interactive plot is generated instead of '[ggplot2]'
lwdInner	The thickness of the inner confidence interval
lwdOuter	The thickness of the outer confidence interval
pointSize	Size of coefficient point
color	The color of the points and lines
cex	The text size multiplier, currently not used
textAngle	The angle for the coefficient labels, 0 is horizontal
numberAngle	The angle for the value labels, 0 is horizontal
shape	The shape of the points
linetype	The linetype of the error bars
outerCI	How wide the outer confidence interval should be, normally 2 standard deviations. If 0, then there will be no outer confidence interval.
innerCI	How wide the inner confidence interval should be, normally 1 standard deviation. If 0, then there will be no inner confidence interval.
multi	logical; If this is for multiplot then leave the colors as determined by the legend, if FALSE then make all colors the same
zeroColor	The color of the line indicating 0
zeroLWD	The thickness of the 0 line
zeroType	The type of 0 line, 0 will mean no line
numeric	logical; If true and factors has exactly one value, then it is displayed in a horizontal graph with continuous confidence bounds.

fillColor	The color of the confidence bounds for a numeric factor
alpha	The transparency level of the numeric factor's confidence bound
horizontal	logical; If the plot should be displayed horizontally
facet	logical; If the coefficients should be faceted by the variables, numeric coefficients (including the intercept) will be one facet
scales	The way the axes should be treated in a faceted plot. Can be c("fixed", "free", "free_x", "free_y")
value	Name of variable for value metric
coefficient	Name of variable for coefficient names
errorHeight	Height of error bars
dodgeHeight	Amount of vertical dodging
...	Further Arguments

Details

A graphical display of the coefficients and standard errors from a fitted model, this function uses a data.frame as the input.

Value

a ggplot graph object

Author(s)

Jared P. Lander

See Also

coefplot

Examples

```
data(diamonds)
head(diamonds)
model1 <- lm(price ~ carat + cut*color, data=diamonds)
model2 <- lm(price ~ carat*color, data=diamonds)
df1 <- coefplot(model1, plot=FALSE)
df2 <- coefplot(model2, plot=FALSE)
coefplot(df1)
coefplot(df2)
```

doRegex *doRegex*

Description

Helper function for matching coefficients

Usage

```
doRegex(x, matchAgainst, pattern = "(^| )%s($|,|=)")
```

Arguments

x	Root pattern to search for
matchAgainst	Text to search through
pattern	Regex pattern to build x into

Details

Only used by getCoefsFromPredictorsRevo for finding matches between predictors and coefficients

Value

A list of indices of matchAgainst that is matched

Author(s)

Jared P. Lander

extract.coef *extract.coef*

Description

Extract Coefficient Information from glm Models

Usage

```
extract.coef(model, ...)
```

Arguments

model	Model object to extract information from.
...	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from a glm model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
library(coefplot)
mod1 <- lm(price ~ carat + cut + x, data=diamonds)
mod2 <- glm(price > 10000 ~ carat + cut + x, data=diamonds, family=binomial(link="logit"))
mod3 <- lm(price ~ carat*cut + x, data=diamonds)
extract.coef(mod1)
extract.coef(mod2)
extract.coef(mod3)

mod4 <- rxLinMod(price ~ carat*cut + x, diamonds)

## End(Not run)
```

`extract.coef.cv.glmnet` *extract.coef.cv.glmnet*

Description

Extract Coefficient Information from Models

Usage

```
## S3 method for class 'cv.glmnet'
extract.coef(model, lambda = "lambda.min", ...)
```

Arguments

`model`	Model object from which to extract information.
`lambda`	Value of penalty parameter. Can be either a numeric value or one of "lambda.min" or "lambda.1se"
`...`	Further arguments

Details

Gets the coefficient values and variable names from a model. Since glmnet does not have standard errors, those will just be NA.

Value

A `data.frame` containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
library(glmnet)
library(ggplot2)
library(useful)
data(diamonds)
diaX <- useful::build.x(price ~ carat + cut + x - 1, data=diamonds,
 contrasts=FALSE)
diaY <- useful::build.y(price ~ carat + cut + x - 1, data=diamonds)
modG1 <- cv.glmnet(x=diaX, y=diaY, k=5)
extract.coef(modG1)
```

`extract.coef.default` *extract.coef.default*

Description

Extract Coefficient Information from Models

Usage

```
## Default S3 method:
extract.coef(model, ...)
```

Arguments

`model`	Model object to extract information from.
`...`	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from a model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
library(coefplot)
data(diamonds)
mod1 <- lm(price ~ carat + cut + x, data=diamonds)
extract.coef(mod1)

## End(Not run)
```

`extract.coef.glm` *extract.coef.glm*

Description

Extract Coefficient Information from glm Models

Usage

```
## S3 method for class 'glm'
extract.coef(model, ...)
```

Arguments

`model`	Model object to extract information from.
`...`	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from a glm model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
library(coefplot)
mod2 <- glm(price > 10000 ~ carat + cut + x, data=diamonds, family=binomial(link="logit"))
extract.coef(mod2)

## End(Not run)
```

`extract.coef.glmnet` *extract.coef.glmnet*

Description

Extract Coefficient Information from Models

Usage

```
## S3 method for class 'glmnet'
extract.coef(model, lambda = stats::median(model$lambda), ...)
```

Arguments

`model`	Model object from which to extract information.
`lambda`	Value of penalty parameter
`...`	Further arguments

Details

Gets the coefficient values and variable names from a model. Since glmnet does not have standard errors, those will just be NA.

Value

A `data.frame` containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

`extract.coef.lm` *extract.coef.lm*

Description

Extract Coefficient Information from lm Models

Usage

```
## S3 method for class 'lm'
extract.coef(model, ...)
```

Arguments

`model`	Model object to extract information from.
`...`	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from an lm model.

Value

A `data.frame` containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
library(coefplot)
mod1 <- lm(price ~ carat + cut + x, data=diamonds)
extract.coef(mod1)

## End(Not run)
```

extract.coef.maxLik *extract.coef.maxLik*

Description

Extract Coefficient Information from Models

Usage

```
## S3 method for class 'maxLik'
extract.coef(model, ...)
```

Arguments

model	Model object from which to extract information.
...	Further arguments

Details

Gets the coefficient values and variable names from a model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

extract.coef.rxGlm *extract.coef.rxGlm*

Description

Extract Coefficient Information from rxGlm Models

Usage

```
## S3 method for class 'rxGlm'
extract.coef(model, ...)
```

Arguments

model	Model object to extract information from.
...	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from an rxGlm model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
mod4 <- rxGlm(price ~ carat + cut + x, data=diamonds)
mod5 <- rxGlm(price > 10000 ~ carat + cut + x, data=diamonds, fmaily="binomial")
extract.coef(mod4)
extract.coef(mod5)

## End(Not run)
```

---

extract.coef.rxLinMod *extract.coef.rxLinMod*

Description

Extract Coefficient Information from rxLinMod Models

Usage

```
## S3 method for class 'rxLinMod'
extract.coef(model, ...)
```

Arguments

model	Model object to extract information from.
...	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from an rxLinMod model.

Value

A data.frame containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
mod3 <- rxLinMod(price ~ carat + cut + x, data=diamonds)
extract.coef(mod3)

## End(Not run)
```

`extract.coef.rxLogit` *extract.coef.rxLogit*

Description

Extract Coefficient Information from rxLogit Models

Usage

```
## S3 method for class 'rxLogit'
extract.coef(model, ...)
```

Arguments

`model`	Model object to extract information from.
`...`	Further arguments

Details

Gets the coefficient values and standard errors, and variable names from an rxLogit model.

Value

A `data.frame` containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
## Not run:
library(ggplot2)
data(diamonds)
mod6 <- rxLogit(price > 10000 ~ carat + cut + x, data=diamonds)
extract.coef(mod6)

## End(Not run)
```

`extract.coef.xgb.Booster` *extract.coef.xgb.Booster*

Description

Extract Coefficient Information from Models

Usage

```
## S3 method for class 'xgb.Booster'
extract.coef(
  model,
  feature_names = NULL,
  removeNonSelected = TRUE,
  zero_threshold = 0.001,
  ...
)
```

Arguments

`model`	Model object from which to extract information.
`feature_names`	Names of coefficients
`removeNonSelected`	If `TRUE` (default) do not return the non-selected (0) coefficients
`zero_threshold`	Since `coefficients` from `xgboost` are not exactly zero, this is the threshold under which a coefficient is considered zero
`...`	Further arguments

Details

Gets the coefficient values and variable names from a model. Since xgboost does not have standard errors, those will just be NA.

Value

A `data.frame` containing the coefficient, the standard error and the variable name.

Author(s)

Jared P. Lander

Examples

```
library(xgboost)
data(diamonds, package='ggplot2')
diaX <- useful::build.x(price ~ carat + cut + x, data=diamonds, contrasts=FALSE)
diaY <- useful::build.y(price ~ carat + cut + x, data=diamonds)
xg1 <- xgb.train(data=xgb.DMatrix(data=diaX, label=diaY),
booster='gblinear',
objective='reg:squarederror', eval_metric='rmse',
nrounds=50
)
extract.coef(xg1)
extract.coef(xg1, zero_threshold=0)
extract.coef(xg1, feature_names=colnames(diaX))
```

`extractPath` *extractPath*

Description

Extracts the coefficient path of the elastic net

Usage

```
extractPath(model, ...)

## S3 method for class 'glmnet'
extractPath(model, intercept = FALSE, ...)

## S3 method for class 'cv.glmnet'
extractPath(model, ...)
```

Arguments

`model`	A `glmnet` model
`...`	Further arguments
`intercept`	If `FALSE` (the default), no intercept will be provided

Details

This is a replacement plot for visualizing the coefficient path resulting from the elastic net.

Value

A link[tibble]{tibble} holding the coefficients for various lambdas

Author(s)

Jared P. Lander

Examples

```
library(glmnet)
data(diamonds, package='ggplot2')
diaX <- useful::build.x(price ~ carat + cut + x - 1, data=diamonds, contrasts = TRUE)
diaY <- useful::build.y(price ~ carat + cut + x - 1, data=diamonds)
modG1 <- glmnet(x=diaX, y=diaY)
extractPath(modG1)

modG2 <- cv.glmnet(x=diaX, y=diaY, nfolds=5)
extractPath(modG2)
```

---

get.assign *get.assign*

Description

The assignment vector for a model

Usage

```
get.assign(model, ...)
```

Arguments

model	Fitted model
...	Further arguments

Details

Gets relative positions of predictors

Value

The assignment vector

Author(s)

Jared P. Lander

`get.assign.glm` *get.assign.glm*

Description

The assignment vector for a glm model

Usage

```
## S3 method for class 'glm'
get.assign(model, ...)
```

Arguments

`model`	Fitted model
`...`	Further arguments

Details

Gets relative positions of predictors

Value

The assignment vector

Author(s)

Jared P. Lander

`get.assign.lm` *get.assign.lm*

Description

The assignment vector for an lm model

Usage

```
## S3 method for class 'lm'
get.assign(model, ...)
```

Arguments

`model`	Fitted model
`...`	Further arguments

Details

Gets relative positions of predictors

Value

The assignment vector

Author(s)

Jared P. Lander

`getCoefsFromPredictors` *getCoefsFromPredictors*

Description

Generic function for finding which coefficients go with which predictors

Usage

```
getCoefsFromPredictors(model, predictors, ...)
```

Arguments

`model`	A fitted model
`predictors`	A character vector of predictors to match against
`...`	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor

Author(s)

Jared P. Lander

getCoefsFromPredictors.default *getCoefsFromPredictors.default*

Description

Default function (lm, glm) for matching coefficients with predictors

Usage

```
## Default S3 method:
getCoefsFromPredictors(model, predictors = NULL, strict = FALSE, ...)
```

Arguments

model	A fitted model
predictors	A character vector of predictors to match against. Interactions can be explicitly specified by VariableA:VariableB.
strict	Logical specifying if interactions terms should be included (FALSE) or just the main terms (TRUE).
...	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor

Author(s)

Jared P. Lander

getCoefsFromPredictors.rxGlm *getCoefsFromPredictors.rxGlm*

Description

Function for matching coefficients with predictors for rxGlm

Usage

```
## S3 method for class 'rxGlm'
getCoefsFromPredictors(model, predictors = NULL, strict = FALSE, ...)
```

Arguments

model	A fitted model
predictors	A character vector of predictors to match against
strict	Logical specifying if interactions terms should be included (FALSE) or just the main terms (TRUE).
...	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor

Author(s)

Jared P. Lander

`getCoefsFromPredictors.rxLinMod`
getCoefsFromPredictors.rxLinMod

Description

Function for matching coefficients with predictors for rxLinMod

Usage

```
## S3 method for class 'rxLinMod'
getCoefsFromPredictors(model, predictors = NULL, strict = FALSE, ...)
```

Arguments

model	A fitted model
predictors	A character vector of predictors to match against
strict	Logical specifying if interactions terms should be included (FALSE) or just the main terms (TRUE).
...	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor

Author(s)

Jared P. Lander

`getCoefsFromPredictors.rxLogit`
getCoefsFromPredictors.rxLogit

Description

Function for matching coefficients with predictors for rxLogit

Usage

```
## S3 method for class 'rxLogit'
getCoefsFromPredictors(model, predictors = NULL, strict = FALSE, ...)
```

Arguments

`model`	A fitted model
`predictors`	A character vector of predictors to match against
`strict`	Logical specifying if interactions terms should be included (`FALSE`) or just the main terms (`TRUE`).
`...`	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor

Author(s)

Jared P. Lander

getCoefsFromPredictorsRevo *getCoefsFromPredictorsRevo*

Description

Function that does the work for Revo models for matching coefficients with predictors

Usage

```
getCoefsFromPredictorsRevo(model, predictors = NULL, strict = FALSE, ...)
```

Arguments

model	A fitted model
predictors	A character vector of predictors to match against
strict	Logical specifying if interactions terms should be included (FALSE) or just the main terms (TRUE).
...	further arguments

Details

The user specifies predictors whose coefficients should be included in the coefplot.

Value

A character vector of coefficients listing the coefficients that match the predictor. As of now interactions cannot be explicitly specified.

Author(s)

Jared P. Lander

---

invlogit *invlogit*

Description

Calculates the inverse logit

Usage

```
invlogit(x)
```

Arguments

x	Vector of numbers

Details

Maps the real line to [0, 1]

Value

x mapped to [0, 1]

Author(s)

Jared P. Lander

Examples

```
invlogit(3)
invlogit(-6:6)
invlogit(c(-1, 1, 2))
```

---

matchCoefs *matchCoefs*

Description

Match coefficients to predictors

Usage

```
matchCoefs(model, ...)
```

Arguments

model	Fitted model
...	Further arguments

Details

Matches coefficients to predictors using information from model matrices

Value

a data.frame matching predictors to coefficients

Author(s)

Jared P. Lander

Examples

```
## Not run:
require(reshape2)
require(plyr)
data("tips", package="reshape2")
mod1 <- lm(tip ~ total_bill * sex + day, tips)
mod2 <- lm(tip ~ total_bill * sex + day - 1, tips)
mod3 <- glm(tip ~ total_bill * sex + day, tips, family=gaussian(link="identity"))
mod4 <- lm(tip ~ (total_bill + sex + day)^3, tips)
mod5 <- lm(tip ~ total_bill * sex + day + I(total_bill^2), tips)
coefplot:::matchCoefs(mod1)
coefplot:::matchCoefs(mod2)
coefplot:::matchCoefs(mod3)
coefplot:::matchCoefs(mod4)
coefplot:::matchCoefs(mod5)

## End(Not run)
```

`matchCoefs.default` *matchCoefs.default*

Description

Match coefficients to predictors

Usage

```
## Default S3 method:
matchCoefs(model, ...)
```

Arguments

`model`	Fitted model
`...`	Further arguments

Details

Matches coefficients to predictors using information from model matrices

Value

a data.frame matching predictors to coefficients

Author(s)

Jared P. Lander

`multiplot` *Plot multiple coefplots*

Description

Plot the coefficients from multiple models

Usage

```
multiplot(
  ...,
  title = "Coefficient Plot",
  xlab = "Value",
  ylab = "Coefficient",
  innerCI = 1,
  outerCI = 2,
  lwdInner = 1,
  lwdOuter = (Sys.info()["sysname"] != "Windows") * 0.5,
  pointSize = 3,
  dodgeHeight = 1,
  color = "blue",
  shape = 16,
  linetype = 1,
  cex = 0.8,
  textAngle = 0,
  numberAngle = 90,
  zeroColor = "grey",
  zeroLWD = 1,
  zeroType = 2,
  single = TRUE,
  scales = "fixed",
  ncol = length(unique(modelCI$Model)),
  sort = c("natural", "normal", "magnitude", "size", "alphabetical"),
  decreasing = FALSE,
  names = NULL,
  numeric = FALSE,
  fillColor = "grey",
  alpha = 1/2,
  horizontal = FALSE,
  factors = NULL,
  only = NULL,
  shorten = TRUE,
  intercept = TRUE,
  interceptName = "(Intercept)",
  coefficients = NULL,
  predictors = NULL,
  strict = FALSE,
```

```
  newNames = NULL,
  plot = TRUE,
  drop = FALSE,
  by = c("Coefficient", "Model"),
  plot.shapes = FALSE,
  plot.linetypes = FALSE,
  legend.position = c("bottom", "right", "left", "top", "none"),
  secret.weapon = FALSE,
  legend.reverse = FALSE,
  trans = identity
)
```

Arguments

...	Models to be plotted
title	The name of the plot, if NULL then no name is given
xlab	The x label
ylab	The y label
innerCI	How wide the inner confidence interval should be, normally 1 standard deviation. If 0, then there will be no inner confidence interval.
outerCI	How wide the outer confidence interval should be, normally 2 standard deviations. If 0, then there will be no outer confidence interval.
lwdInner	The thickness of the inner confidence interval
lwdOuter	The thickness of the outer confidence interval
pointSize	Size of coefficient point
dodgeHeight	Amount of vertical dodging
color	The color of the points and lines
shape	The shape of the points
linetype	The type of line drawn for the standard errors
cex	The text size multiplier, currently not used
textAngle	The angle for the coefficient labels, 0 is horizontal
numberAngle	The angle for the value labels, 0 is horizontal
zeroColor	The color of the line indicating 0
zeroLWD	The thickness of the 0 line
zeroType	The type of 0 line, 0 will mean no line
single	logical; If TRUE there will be one plot with the points and bars stacked, otherwise the models will be displayed in separate facets
scales	The way the axes should be treated in a faceted plot. Can be c("fixed", "free", "free_x", "free_y")
ncol	The number of columns that the models should be plotted in
sort	Determines the sort order of the coefficients. Possible values are c("natural", "magnitude", "alphabetical")

decreasing	logical; Whether the coefficients should be ascending or descending
names	Names for models, if NULL then they will be named after their inputs
numeric	logical; If true and factors has exactly one value, then it is displayed in a horizontal graph with continuous confidence bounds.
fillColor	The color of the confidence bounds for a numeric factor
alpha	The transparency level of the numeric factor's confidence bound
horizontal	logical; If the plot should be displayed horizontally
factors	Vector of factor variables that will be the only ones shown
only	logical; If factors has a value this determines how interactions are treated. True means just that variable will be shown and not its interactions. False means interactions will be included.
shorten	logical or character; If FALSE then coefficients for factor levels will include their variable name. If TRUE coefficients for factor levels will be stripped of their variable names. If a character vector of variables only coefficients for factor levels associated with those variables will the variable names stripped.
intercept	logical; Whether the Intercept coefficient should be plotted
interceptName	Specifies name of intercept it case it is not the default of "(Intercept").
coefficients	A character vector specifying which factor coefficients to keep. It will keep all levels and any interactions, even if those are not listed.
predictors	A character vector specifying which coefficients to keep. Each individual coefficient can be specified. Use predictors to specify entire factors
strict	If TRUE then predictors will only be matched to its own coefficients, not its interactions
newNames	Named character vector of new names for coefficients
plot	logical; If the plot should be drawn, if false then a data.frame of the values will be returned
drop	logical; if TRUE then models without valid coefficients to show will not be plotted
by	If "Coefficient" then a normal multiplot is plotted, if "Model" then the coefficients are plotted along the axis with one for each model. If plotting by model only one coefficient at a time can be selected. This is called the secret weapon by Andy Gelman.
plot.shapes	If TRUE points will have different shapes for different models
plot.linetypes	If TRUE lines will have different shapes for different models
legend.position	position of legend, one of "left", "right", "bottom", "top", "none"
secret.weapon	If this is TRUE and exactly one coefficient is listed in coefficients then Andy Gelman's secret weapon is plotted.
legend.reverse	Setting to reverse the legend in a multiplot so that it matches the order they are drawn in the plot
trans	A transformation function to apply to the values and confidence intervals. identity by default. Use invlogit for binary regression.

Details

Plots a graph similar to coefplot but for multiple plots at once.

For now, if names is provided the plots will appear in alphabetical order of the names. This will be adjusted in future iterations. When setting by to "Model" and specifying exactly one variable in variables that one coefficient will be plotted repeatedly with the axis labeled by model. This is Andy Gelman's secret weapon.

Value

A ggplot object

See Also

link{coefplot}

Examples

```
data(diamonds)
model1 <- lm(price ~ carat + cut, data=diamonds)
model2 <- lm(price ~ carat + cut + color, data=diamonds)
model3 <- lm(price ~ carat + color, data=diamonds)
multiplot(model1, model2, model3)
multiplot(model1, model2, model3, single=FALSE)
multiplot(model1, model2, model3, plot=FALSE)
require(reshape2)
data(tips, package="reshape2")
mod1 <- lm(tip ~ total_bill + sex, data=tips)
mod2 <- lm(tip ~ total_bill * sex, data=tips)
mod3 <- lm(tip ~ total_bill * sex * day, data=tips)
mod7 <- lm(tip ~ total_bill + day + time, data=tips)
multiplot(mod1, mod2, mod3, mod7, single=FALSE, scales="free_x")
multiplot(mod1, mod2, mod3, mod7, single=FALSE, scales="free_x")
multiplot(mod1, mod2, mod3, mod7, single=FALSE, scales="free_x", plot.shapes=TRUE)
multiplot(mod1, mod2, mod3, mod7, single=TRUE, scales="free_x",
plot.shapes=TRUE, plot.linetypes=TRUE)
multiplot(mod1, mod2, mod3, mod7, single=TRUE, scales="free_x",
plot.shapes=FALSE, plot.linetypes=TRUE, legend.position="bottom")
# the secret weapon
multiplot(mod1, mod2, mod3, mod7, coefficients="total_bill", secret.weapon=TRUE)
# horizontal secret weapon
multiplot(mod1, mod2, mod3, mod7, coefficients="total_bill", by="Model", horizontal=FALSE)
```

position_dodgev *Adjust position by dodging overlaps to the side.*

Description

Adjust position by dodging overlaps to the side.

Usage

```
position_dodgev(height = NULL)
```

Arguments

height	Dodging height, when different to the height of the individual elements. This is useful when you want to align narrow geoms with wider geoms. See the examples for a use case.

Examples

```
ggplot(mtcars, aes(factor(cyl), fill = factor(vs))) +
  geom_bar(position = "dodge")

ggplot(diamonds, aes(price, fill = cut)) +
  geom_histogram(position="dodge")
# see ?geom_boxplot and ?geom_bar for more examples

# To dodge items with different heights, you need to be explicit
df <- data.frame(x=c("a","a","b","b"), y=2:5, g = rep(1:2, 2))
p <- ggplot(df, aes(x, y, group = g)) +
  geom_bar(
    stat = "identity", position = "dodge",
    fill = "grey50", colour = "black"
  )
p

# A line range has no height:
p + geom_linerange(aes(ymin = y-1, ymax = y+1), position = "dodge")
# You need to explicitly specify the height for dodging
p + geom_linerange(aes(ymin = y-1, ymax = y+1),
  position = position_dodge(width = 0.9))

# Similarly with error bars:
p + geom_errorbar(aes(ymin = y-1, ymax = y+1), width = 0.2,
  position = "dodge")
p + geom_errorbar(aes(ymin = y-1, ymax = y+1, height = 0.2),
  position = position_dodge(width = 0.90))
```

Index