Package 'ERSA'

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Type Package

Title Exploratory Regression 'Shiny' App

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Description Constructs a 'shiny' app function with interactive displays for summary and analysis of variance regression tables, and parallel coordinate plots of data and residuals.

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Encoding UTF-8

LazyData true

Imports shiny, miniUI,RColorBrewer, ggplot2, car, leaps, broom, dplyr, tidyr, purrr, combinat,stats, methods

RoxygenNote 7.1.1

Suggests knitr, rmarkdown, testthat

VignetteBuilder knitr

NeedsCompilation no

Repository CRAN

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R topics documented:

`add1_models` *Constructs a list of fits by adding predictors sequentially*

Description

Constructs a list of fits by adding predictors sequentially

Usage

```
add1_models(model, preds, data = NULL)
```

Arguments

`model`	A linear model
`preds`	Predictors to be added sequentially
`data`	The dataset (optional)

Value

A list of linear fits

`createERServer` *A function which returns a shiny server for Exploratory Regression*

Description

A function which returns a shiny server for Exploratory Regression

Usage

```
createERServer(
  ERfit,
  ERdata = NULL,
  ERbarcols = RColorBrewer::brewer.pal(4, "Set2"),
  ERnpcpCols = 4,
  pvalOrder = F
)
```

Arguments

ERfit	the lm fit to be explored
ERdata	the data used to fit the model. If NULL, attempts to extract from ERfit.
ERbarcols	a vector of colours, one per term in lm. Will be expanded via colorRampPalette if not the correct length.
ERnpcpCols	number of colours for the PCP
pvalOrder	if TRUE, re-arranges predictors in order of p-value

Value

a function

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createERUI *Constructs UI for Exploratory Regression app*

Description

Constructs UI for Exploratory Regression app

Usage

```
createERUI(tablesOnly = F, gadget = TRUE)
```

Arguments

tablesOnly	if TRUE, shows Plots 1-3 only.
gadget	If TRUE, constructs a gadget, otherwise a shinyApp

Value

the UI

---

drop1_models *Constructs a list of fits by dropping predictors from the supplied model*

Description

Constructs a list of fits by dropping predictors from the supplied model

Usage

```
drop1_models(model, preds, data = NULL)
```

Arguments

model	A linear model
preds	Predictors to be dropped
data	The dataset (optional)

Value

A list of linear fits

ERSA *ERSA: A package exploring regressions with a Shiny app*

Description

The Exploratory Regression Shiny App (ERSA) package consists of a collection of functions for displaying the results of a regression calculation, which are then packaged together as a shiny app function.

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exploreReg *A function to launch the Exploratory Regression Shiny App*

Description

A function to launch the Exploratory Regression Shiny App

Usage

```
exploreReg(
  ERmfull,
  ERdata = NULL,
  ERbarcols = RColorBrewer::brewer.pal(4, "Set2"),
  npcpCols = 4,
  pvalOrder = F,
  tablesOnly = F,
  displayHeight = NULL,
  gadget = TRUE,
  viewer = "dialogViewer"
)
```

Arguments

ERmfull	the lm fit to be explored
ERdata	the data used to fit the model. If NULL, attempts to extract from ERmfull.
ERbarcols	a vector of colours, one per term in lm. Will be expanded via colorRampPalette if not the correct length.
npcpCols	number of colours for the PCP
pvalOrder	if TRUE, re-arranges predictors in order of p-value
tablesOnly	if TRUE, shows Plots 1-3 only.
displayHeight	supply a value for the display height
gadget	If TRUE, constructs a gadget, otherwise a shinyApp.
viewer	For gadget, defaults to "dialogViewer". May be "paneViewer" or "browserViewer"

Value

the result

Examples

```
f <- lm(mpg ~ hp+wt+disp, data=mtcars)
## Not run: exploreReg(f)
```

---

pcpPlot *A PCP plot of the data, residuals or hat values from regression fits*

Description

A PCP plot of the data, residuals or hat values from regression fits

Usage

```
pcpPlot(
  data,
  fit,
  type = "Variables",
  npcpCols = 4,
  resDiff = F,
  absResid = F,
  sequential = F,
  selnum = NULL
)
```

Arguments

data	a data frame
fit	a lm for the data frame
type	one of "Variables", "Residuals", "Hatvalues"
npcpCols	number of colours
resDiff	difference residuals, TRUE or FALSE
absResid	absolute residuals, TRUE or FALSE
sequential	use sequential fits (TRUE) or drop1 fits (FALSE)
selnum	row numbers of cases to be highlighted

Value

ggplot

Examples

```
f <- lm(mpg ~ wt+hp+disp, data=mtcars)
pcpPlot(mtcars, f, type="Residuals")
```

---

plotSeqSS *Plots barcharts of sequential sums of squares of lm*

Description

Plots barcharts of sequential sums of squares of lm

Usage

```
plotSeqSS(fits, barcols = NULL, legend = F)
```

Arguments

fits	list of lm objects
barcols	a vector of colours, one per term in lms
legend	TRUE or FALSE

Value

a ggplot

Examples

```
plotSeqSS(list(fit1= lm(mpg ~ wt+hp+disp, data=mtcars),
fit2=lm(mpg ~ wt*hp*disp, data=mtcars)))
```

plotSum *Plots of model summaries*

Description

Plots of model summaries

Usage

```
plotAnovaStats(
  fit0,
  barcols = NULL,
  preds = NULL,
  alpha = 0.05,
  type = "SS",
  width = 0.3
)

plottStats(fit0, barcols = NULL, preds = NULL, alpha = 0.05, width = 0.3)

plotCIStats(
  fit0,
  barcols = NULL,
  preds = NULL,
  alpha = 0.05,
  stdunits = FALSE,
  width = 0.3
)
```

Arguments

fit0	is an lm object
barcols	a vector of colours, one per term in lm
preds	terms to include in plot
alpha	significance level
type	"SS" or "F", from type 3 Anova
width	bar width
stdunits	TRUE or FALSE. If TRUE, coefficients refer to standardised predictor units.

Value

a ggplot

Functions

- `plotAnovaStats`: Plots barchart of F or SS from lm
- `plottStats`: Plots barchart of t stats from lm
- `plotCIStats`: Plots confidence intervals from lm

Examples

```
plotAnovaStats(lm(mpg ~ wt+hp+disp, data=mtcars))
plottStats(lm(mpg ~ wt+hp+disp, data=mtcars))
plotCIStats(lm(mpg ~ wt+hp+disp, data=mtcars))
```

`reorderTerms` *Re-order model terms*

Description

Re-order model terms

Usage

```
pvalOrder(m, d = NULL, refit = TRUE)

bselOrder(m, d = NULL, refit = TRUE, maxNPred = NULL)

fselOrder(m, d = NULL, refit = TRUE, maxNPred = NULL)

revPredOrder(m, d = NULL, refit = TRUE)

randomPredOrder(m, d = NULL, refit = TRUE)

regsubsetsOrder(m, d = NULL, refit = TRUE, collapse = TRUE)
```

Arguments

`m`	an lm objecct
`d`	the data frame. If NULL, attempts to extract from m.
`refit`	TRUE or FALSE
`maxNPred`	maximum number of predictors to use, defaults to all.
`collapse`	TRUE or FALSE

Value

a vector of terms in order last to first, or an lm if refit=TRUE. regsubsetsOrder returns a list of predictor vectors, or a list of fits

Functions

- `pvalOrder`: Arranges model terms in order of increasing p-value
- `bselOrder`: Arranges model terms using backwards selection
- `fselOrder`: Forwards selection
- `revPredOrder`: Reverses order of terms in a fit
- `randomPredOrder`: Reorders terms in a fit randomly
- `regsubsetsOrder`: Best subsets regression.

Examples

```
bselOrder(lm(mpg~wt+hp+disp, data=mtcars))
fselOrder(lm(mpg~wt+hp+disp, data=mtcars))
revPredOrder(lm(mpg~wt+hp+disp, data=mtcars))
randomPredOrder(lm(mpg~wt+hp+disp, data=mtcars))
regsubsetsOrder(lm(mpg~wt+hp+disp, data=mtcars))
```

`termColours` *Constructs colour vector for model terms*

Description

Constructs colour vector for model terms

Usage

```
termColours(f, pal = RColorBrewer::brewer.pal(4, "Set2"))
```

Arguments

`f`	a model fit with term labels
`pal`	use this palette

Value

a vector of colours. Residuals are given a grey color

Examples

```
termColours(lm(mpg ~ wt+hp, data=mtcars))
```

Index