Package 'linearReg'

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Type Package

Title Linear Regression Analysis Tools

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Description This package provides a tool for conducting linear regression analysis, enabling users to fit models, summarize results, and calculate key statistics including confidence intervals for coefficients, R-squared, and F-statistics.

License GPL-3

Encoding UTF-8

RoxygenNote 7.3.2

Imports stats

Suggests knitr, rmarkdown, testthat (>= 3.0.0), bench

Config/testthat/edition 3

VignetteBuilder knitr

NeedsCompilation no

R topics documented:

`fitLinearModel` *Linear Regression Function*

Description

This function performs linear regression on input dataset using the ordinary least squares method. It calculates beta coefficients, standard errors of each coefficient, mean squared error (MSE), and returns various statistics, including R-squared, adjusted R-squared, and F statistics.

Usage

```
fitLinearModel(formula, data)
```

Arguments

formula	A formula describing the model to be fitted.
data	A data.frame that contains the variables in the model.

Value

A list containing model coefficients, standard errors, MSE, R-squared, adjusted R-squared, F-statistic, p-value of the F-statistic, number of observations, and number of predictors, and fitted values.

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
print(model)
```

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getAdjustedRSquared *Return the adjusted R Squared value for the model*

Description

Return the adjusted R Squared value for the model

Usage

```
getAdjustedRSquared(model)
```

Arguments

model	The model list object returned by ‘fitLinearModel‘.

Value

Returns adjusted_R_squared Squared for model

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
adjusted_R_squared = getAdjustedRSquared(model)
```

getConfidenceInterval *Confidence Interval for Model Coefficients*

Description

This function calculates the confidence intervals for the fitted linear regression model with specified confidence level.

Usage

```
getConfidenceInterval(model, level = 0.95)
```

Arguments

model	The model list object returned by ‘fitLinearModel‘.
level	The confidence level for the interval (default is 0.95).

Value

Returns a data frame with estimates of the coefficients and their lower and upper bounds.

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
ci = getConfidenceInterval(model)
print(ci)
```

getFStatistic *Return the F statistics value for the model*

Description

Return the F statistics value for the model

Usage

```
getFStatistic(model)
```

Arguments

model	The model list object returned by ‘fitLinearModel‘.

Value

Returns F statistics for model

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
F_statistic = getFStatistic(model)
print(F_statistic)
```

`getRSquared` *Return the R Squared value for the model*

Description

Return the R Squared value for the model

Usage

```
getRSquared(model)
```

Arguments

`model`	The model list object returned by ‘fitLinearModel‘.

Value

Returns R Squared for model

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
R_squared = getRSquared(model)
print(R_squared)
```

`model_summary` *Model Summary*

Description

The purpose of this function is to show a full summary of the linear regression model, including estimates of the coefficients, standard errors, t-values, and p-values of fitted coefficients.

Usage

```
model_summary(model)
```

Arguments

`model`	The model list object returned by ‘fitLinearModel()‘.

Value

Prints the summary table

Examples

```
data(iris)
model = fitLinearModel(Petal.Length ~ Petal.Width + Sepal.Length, iris)
model_summary(model)
```