

Package ‘forecaster’

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Title Time Series Forecast System

Version 2.0.2

Description A web application for displaying, analysing and forecasting univariate time series. Includes basic methods such as mean, naïve, seasonal naïve and drift, as well as more complex methods such as Holt-Winters Box, G and Jenkins, G (1976) <doi:10.1111/jtsa.12194> and ARIMA Brockwell, P.J. and R.A.Davis (1991) <doi:10.1007/978-1-4419-0320-4>.

License GPL (>= 2)

Imports DT, zoo, golem, config, forecast, htmltools, lubridate, stringr, keras, rlang, shinyjs, shinyAce, echarts4r, htmlwidgets, colourpicker, shinydashboard, shiny (>= 1.7.1), shinycustomloader, shinydashboardPlus (>= 2.0.0)

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URL <https://promidat.website>, <https://github.com/PROMiDAT/forecaster>

BugReports <https://github.com/PROMiDAT/forecaster/issues>

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calibrar.arima	<i>Best parameters arima model</i>
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Description

Best parameters arima model

Usage

```
calibrar.arima(train, test, period, ar = 0:2, es = 0:1)
```

Arguments

train	a ts object (train of a time series).
test	a ts object (test of a time series).
period	value indicate the period to use.
ar	vector of values to test p, d, q of arima model.
es	vector of values to test P, D, Q of arima model.

Value

arima model

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
calibrar.arima(AirPassengers[1:132], AirPassengers[133:144], 12, 0:1)
```

calibrar.HW *Best parameters HoltWinters model*

Description

Best parameters HoltWinters model

Usage

```
calibrar.HW(train, test, paso = 0.1)
```

Arguments

train	a ts object (train of a time series).
test	a ts object (test of a time series).
paso	indicates by value to test alpha, beta and gamma.

Value

HoltWinters model

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
calibrar.HW(window(AirPassengers, end = c(1959, 12)), window(AirPassengers, start = 1960), 0.5)
```

dfnormal	<i>Data.frame with normal test</i>
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Description

Data.frame with normal test

Usage

```
dfnormal(data)
```

Arguments

data a data.frame object only with the numeric columns.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
dfnormal(iris[, -5])
```

df_periods	<i>Periodogram Data.frame</i>
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Description

Periodogram Data.frame

Usage

```
df_periods(x)
```

Arguments

x a ts object.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
df_periods(AirPassengers)
```

e_acf

Best parameters arima model

Description

Best parameters arima model

Usage

```
e_acf(x)
```

Arguments

x a ts object.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_acf(AirPassengers)
```

e_decompose

Decompose plot

Description

Decompose plot

Usage

```
e_decompose(serie, f = NULL, noms = NULL)
```

Arguments

serie	a ts object.
f	vector of dates for the time series.
noms	vector of names for y axis.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_decompose(AirPassengers)
```

e_histnormal

Normal plot

Description

Normal plot

Usage

```
e_histnormal(  
  data,  
  colorbar = "steelblue",  
  colorline = "gray",  
  nombres = c("Histograma", "Curva Normal")  
)
```

Arguments

- `data` a numeric column of a data.frame.
- `colorbar` a color for the bars.
- `colorline` a color for the line.
- `nombres` a character vector of length 2 specifying the titles to use on legend.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_histnormal(iris$Sepal.Length)
```

e_pacf

Best parameters arima model

Description

Best parameters arima model

Usage

```
e_pacf(x)
```

Arguments

`x` a ts object.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_pacf(AirPassengers)
```

e_periods *Periodogram Plot*

Description

Periodogram Plot

Usage

```
e_periods(x, p = NULL, noms = NULL)
```

Arguments

x a ts object.
p which important period to plot.
noms vector of length 3 to indicate the text to use.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_periods(AirPassengers)
```

e_qq *Qplot + Qline*

Description

Qplot + Qline

Usage

```
e_qq(data, colorpoint = "steelblue", colorline = "gray")
```

Arguments

data a numeric column of a data.frame.
colorpoint a color for the points.
colorline a color for the line.

Value

echarts4r plot

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_qq(iris$Sepal.Length)
```

e_tc

Tendencia y Estacionalidad

Description

Tendencia y Estacionalidad

Usage

```
e_tc(x, d = NULL, noms = c("Time Series", "Trend", "Cyclicalitv"))
```

Arguments

x a ts object.
d a vector of dates to use on axis x (Optional).
noms a vector of 3 to indicate the names to use on legend.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
e_tc(AirPassengers)
```

 forecaster

Time Series Forecast System

Description

A web application for displaying, analysing and forecasting univariate time series. Includes basic methods such as mean, naïve, seasonal naïve and drift, as well as more complex methods such as Holt-Winters Box, G and Jenkins, G (1976) <doi:10.1111/jtsa.12194> and ARIMA Brockwell, P.J. and R.A.Davis (1991) <doi:10.1007/978-1-4419-0320-4>.

Details

Package: forecaster
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Author(s)

Maintainer: Oldemar Rodriguez Rojas <oldemar.rodriquez@ucr.ac.cr>

- Oldemar Rodriguez Rojas <oldemar.rodriquez@ucr.ac.cr>
- Diego Jiménez Alvarado

 get_start

Get ts start of a time series

Description

Get ts start of a time series

Usage

```
get_start(ini, tipo_f, patron)
```

Arguments

ini a Date object.
 tipo_f type of the time series ('year', 'month', ..., 'seconds').
 patron frequency of time series.

Value

numeric vector of length 2

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
get_start(as.Date("2021-06-30"), 'days', 365)
```

grafico.errores	<i>Error plot for all predictions</i>
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Description

Error plot for all predictions

Usage

```
grafico.errores(errores)
```

Arguments

errores a data.frame with errors of a time series.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))
pred <- predict(model, 12)
e <- tabla.errores(list(pred$pred), window(AirPassengers, start = 1960))
grafico.errores(e)
```

MSE

Mean Square Error

Description

Mean Square Error

Usage

MSE(Pred, Real)

Arguments

Pred a ts object (prediction).
Real a ts object (real).

Value

numeric

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))  
pred <- predict(model, 12)  
MSE(pred$pred, window(AirPassengers, start = 1960))
```

pred.tskeras*Time series forecasts for a keras model.*

Description

Time series forecasts for a keras model.

Usage

pred.tskeras(object, h = 1)

Arguments

object An object from keras.
h Number of periods for forecasting.

Value

Point forecasts as a time series.

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
library(keras)
modelo.deep <- keras_model_sequential() %>%
  layer_lstm(
    units = 10, activation = 'tanh', batch_input_shape = c(1, 12, 1),
    return_sequences = TRUE, stateful = TRUE) %>%
  layer_dense(units = 1) %>%
  compile(loss = 'mse', optimizer = 'adam', metrics = 'mse')
modelo.deep <- tskeras(AirPassengers, modelo.deep, lag = 12, epochs = 1)
pred.tskeras(modelo.deep, h = 12)
```

RE

Relative Error

Description

Relative Error

Usage

RE(Pred, Real)

Arguments

Pred a ts object (prediction).

Real a ts object (real).

Value

numeric

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))  
pred <- predict(model, 12)  
RE(pred$pred, window(AirPassengers, start = 1960))
```

RMSE

Root Mean Square Error

Description

Root Mean Square Error

Usage

```
RMSE(Pred, Real)
```

Arguments

Pred a ts object (prediction).
Real a ts object (real).

Value

numeric

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))  
pred <- predict(model, 12)  
RMSE(pred$pred, window(AirPassengers, start = 1960))
```

RSS

RSS

Description

RSS

Usage

RSS(Pred, Real)

Arguments

Pred a ts object (prediction).
Real a ts object (real).

Value

numeric

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))  
pred <- predict(model, 12)  
RSS(pred$pred, window(AirPassengers, start = 1960))
```

run_app

Run the Shiny Application

Description

Run the Shiny Application

Usage

run_app(...)

Arguments

... A series of options to be used inside the app.

smoothing	<i>Apply rolling to a numeric vector.</i>
-----------	---

Description

Apply rolling to a numeric vector.

Usage

```
smoothing(v, n)
```

Arguments

v	a numeric vector.
n	integer value specifying the window width.

Value

numeric vector

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
smoothing(AirPassengers, 5)
```

tabla.errores	<i>Error table for all predictions</i>
---------------	--

Description

Error table for all predictions

Usage

```
tabla.errores(Preds, Real, nombres = NULL)
```

Arguments

Preds	a list of ts objects (prediction).
Real	a ts object (real).
nombres	names for the data.frame (optional).

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
model <- arima(window(AirPassengers, end = c(1959, 12)))
pred <- predict(model, 12)
tabla.errores(list(pred$pred), window(AirPassengers, start = 1960))
```

text_toDate

Convert character to dates

Description

Convert character to dates

Usage

```
text_toDate(f)
```

Arguments

f a vector of character.

Value

list

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
text_toDate(c("2023 january 27", "2023 january 28"))
```

tskeras

keras model for time series.

Description

keras model for time series.

Usage

```
tskeras(x, model, lag = 1, batch_size = 1, epochs = 20, verbose = 0)
```

Arguments

x	a ts object.
model	a keras model.
lag	indicates by value to test alpha, beta and gamma.
batch_size	indicates by value to test alpha, beta and gamma.
epochs	indicates by value to test alpha, beta and gamma.
verbose	indicates by value to test alpha, beta and gamma.

Value

keras model

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
library(keras)
modelo.deep <- keras_model_sequential() %>%
  layer_lstm(
    units = 10, activation = 'tanh', batch_input_shape = c(1, 12, 1),
    return_sequences = TRUE, stateful = TRUE) %>%
  layer_dense(units = 1) %>%
  compile(loss = 'mse', optimizer = 'adam', metrics = 'mse')
tskeras(AirPassengers, modelo.deep, lag = 12, epochs = 1)
```

var.categoricas *Filter category variables of a data.frame*

Description

Filter category variables of a data.frame

Usage

```
var.categoricas(data)
```

Arguments

data a data.frame object.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
var.categoricas(iris)
```

var.numericas *Filter numeric variables of a data.frame*

Description

Filter numeric variables of a data.frame

Usage

```
var.numericas(data)
```

Arguments

data a data.frame object.

Value

data.frame

Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

Examples

```
var.numericas(iris)
```

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