# Package: forecasteR (via r-universe)

October 15, 2024

**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)

**Depends** R (>= 4.0)

**Encoding** UTF-8

**URL** https://promidat.website, https://github.com/PROMiDAT/forecasteR

**BugReports** https://github.com/PROMiDAT/forecasteR/issues

**RoxygenNote** 7.2.3

**Repository** https://promidat.r-universe.dev

**RemoteUrl** https://github.com/PROMiDAT/forecasteR

**RemoteRef** HEAD

**RemoteSha** 34774818c8c98fe7c93b85b4c121dc35098ae242

## Contents

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`calibrar.arima` *Best parameters arima model*

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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 *Data.frame with normal test*

### 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 *Periodogram Data.frame*

### 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 lenght 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)
```

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`e_tc` *Tendencia y Estacionalidad*

---

## Description

Tendencia y Estacionalidad

## Usage

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

## 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 |
| Type: | Package |
| Version: | 2.0.2 |
| Date: | 2023-06-19 |
| License: | GPL (>=2) |

### Author(s)

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- Oldemar Rodriguez Rojas <oldemar.rodriguez@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 lenght 2

### Author(s)

Diego Jimenez <diego.jimenez@promidat.com>

### Examples

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

---

## grafico.errores *Error plot for all predictions*

---

### 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 *Apply rolling to a numeric vector.*

### 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 *Error table for all predictions*

### 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)
```

# Index