Package: rego (via r-universe)

January 10, 2025

Type Package

Title Automatic Time Series Forecasting and Missing Value Imputation

Version 1.6.1

Date 2023-08-09

Maintainer Davide Altomare <info@channelattribution.io>

Description Machine learning algorithm for predicting and imputing time series. It can automatically set all the parameters needed, thus in the minimal configuration it only requires the target variable and the dependent variables if present. It can address large problems with hundreds or thousands of dependent variables and problems in which the number of dependent variables is greater than the number of observations. Moreover it can be used not only for time series but also for any other real valued target variable. The algorithm implemented includes a Bayesian stochastic search methodology for model selection and a robust estimation based on bootstrapping. 'rego' is fast because all the code is C++.

License MIT + file LICENSE

URL https://channelattribution.io/docs/rego

BugReports https://github.com/DavideAltomare/rego/issues

LinkingTo Rcpp

Imports Rcpp

SystemRequirements GNU make

NeedsCompilation yes

Author Davide Altomare [cre, aut], David Loris [aut]

Depends R (>= 3.5.0)

Date/Publication 2023-08-09 10:50:05 UTC

Additional_repositories https://cranhaven.r-universe.dev

Config/pak/sysreqs make

Repository https://cranhaven.r-universe.dev

RemoteUrl https://github.com/cranhaven/cranhaven.r-universe.dev

RemoteRef package/rego

RemoteSha d336a80ab2af649af68bec63d5f14ccef3dd9796

RemoteSubdir rego

Contents

---

rego-package *Automatic Time Series Forecasting and Missing Value Imputation.*

Description

rego is a machine learning algorithm for predicting and imputing time series. It can automatically set all the parameters needed, thus in the minimal configuration it only requires the target variable and the regressors if present. It can address large problems with hundreds or thousands of dependent variables and problems in which the number of dependent variables is greater than the number of observations. Moreover it can be used not only with time series but also with any other real valued target variable. The algorithm implemented includes a Bayesian stochastic search methodology for model selection and a robust estimation based on bootstrapping. rego is fast because all the code is C++.

Details

Package:	rego
Type:	Package
Version:	1.6.1
Date:	2023-08-09
License: GPL3 | see file LICENCE	

Package contains a function for automatic time series forecasting and missing values imputation.

Author(s)

Davide Altomare (`<info@channelattribution.io>`).

References

rego Documentation

`Data` *Airline Passenger Dataset*

Description

Airline Passenger Dataset

Usage

```
data(Data)
```

Format

`Data` is a data.frame with 156 rows and 1 column containing the yearly number of airline passengers

`regpred` *Automatic Time Series forecasting and Missing Value Imputation.*

Description

Automatic time series prediction and missing value imputation.

Usage

```
regpred(Data, from_lag=1, max_lag="auto", alpha=0.05, nsim=1000, flg_print=1,
        direction="->", flg_const=TRUE, flg_diff=FALSE, model=NULL)
```

Arguments

`Data`	data.frame containing target variable at first column and regressors if present from second to last column.
`from_lag`	minimum time lag to be considered in the autoregressive moving average part of the algorithm.
`max_lag`	maximum time lag to be considered in the autoregressive moving average part of the algorithm. If "auto" then the algorithm will set a suitable value. Set to 0 or NULL if you want to remove the autoregressive moving average part as in case of non time series data.
`alpha`	significance level for the confidence interval produced around predictions. If 0.05 then the algorithm will calculate a 95% confidence interval around predictions.
`nsim`	number of bootstrap replications used for producing confidence interval around predictions.
`flg_print`	if 1 some information during the evaluation will be printed.

direction — if "->" then only a forward prediction will be executed, if "<-" then only a backward prediction will be executed, if "<->" then both a forward than a backward prediction will be executed if possible. For imputing missing values is convenient to leave default "<->".

flg_const — if 1 then a constant is included into the model.

flg_diff — if 1 and no regressor is present then if the target variable exhibits a trend, it is one-step differentiated up to two times.

model — estimated models from a previous train to be used in new data prediction without retraining.

Value

An object of class list with predictions and models.

Author(s)

Davide Altomare (<info@channelattribution.io>).

References

rego Documentation

Examples

```
## Not run:

#example 1: seasonal time series

library(rego)

data(Data)

res=regpred(Data)

#print final prediction
print(res$prediction)

#example 2: high dimensional problem

Data=read.csv(url("https://channelattribution.io/csv/Data_sim_1000.csv"),header=FALSE)

res=regpred(Data, max_lag=NULL)

#print final prediction
print(res$prediction)



## End(Not run)
```

Index