

Package ‘rego’

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Type Package

Title Automatic Time Series Forecasting and Missing Value Imputation

Version 1.5.2

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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++.

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

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

LinkingTo Rcpp

Imports Rcpp

SystemRequirements GNU make

NeedsCompilation yes

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Depends R (>= 3.5.0)

Repository CRAN

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R topics documented:

| | |
|------------------------|---|
| rego-package | 2 |
| Data | 2 |
| regpred | 3 |

Index**5**

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: | 1.5.2 |
| Date: | 2022-05-26 |
| 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="->", loss_function="MSE", 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 "<->". |
| loss_function | if "MAE" then mean absolute error will be used as loss function in parameters estimation, if "MSE" then mean squared error will be set. |
| 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

- * **linear regression**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **missing imputation**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **prediction intervals**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **regression**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **sarimax**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **time series forecasting**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **time series prediction**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
 - * **time series**
 - Data, [2](#)
 - rego-package, [2](#)
 - regpred, [3](#)
- Data, [2](#)
- rego (rego-package), [2](#)
- rego-package, [2](#)
- regpred, [3](#)