

# Package: WaveletSVR (via r-universe)

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**Type** Package

**Title** Wavelet-SVR Hybrid Model for Time Series Forecasting

**Version** 0.1.0

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**Description** The main aim of this package is to combine the advantage of wavelet and support vector machine models for time series forecasting. This package also gives the accuracy measurements in terms of RMSE and MAPE. This package fits the hybrid Wavelet SVR model for time series forecasting. The main aim of this package is to combine the advantage of wavelet and Support Vector Regression (SVR) models for time series forecasting. This package also gives the accuracy measurements in terms of Root Mean Square Error (RMSE) and Mean Absolute Prediction Error (MAPE). This package is based on the algorithm of Raimundo and Okamoto (2018) <[DOI:10.1109/INFOCT.2018.8356851](https://doi.org/10.1109/INFOCT.2018.8356851)>.

**License** GPL-3

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Imports** stats, wavelets, fracdiff, forecast, e1071, tsutils

**NeedsCompilation** no

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**Repository** <https://ranjitstat.r-universe.dev>

**RemoteUrl** <https://github.com/cran/WaveletSVR>

**RemoteRef** HEAD

**RemoteSha** 6b93a74634a28569544e3ab9cfd55f0cc6c79705

## Contents

|                             |   |
|-----------------------------|---|
| WaveletFitting . . . . .    | 2 |
| WaveletFittingsvr . . . . . | 3 |

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|                |   |
|----------------|---|
| WaveletFitting | <i>Wavelet Transform Using Maximal Overlap Discrete Wavelet Transform (MODWT) Algorithm</i> |
|----------------|---|

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**Description**

Transforms the time series data by using hybrid MODWT algorithm.

**Usage**

```
WaveletFitting(
  ts,
  Wvlevels,
  WFilter = "haar",
  bndry = "periodic",
  FFlag = TRUE
)
```

**Arguments**

|          |   |
|----------|---|
| ts       | Univariate time series  |
| Wvlevels | The level of wavelet decomposition  |
| WFilter  | Wavelet filter use in the decomposition                                     |
| bndry    | The boundary condition of wavelet decomposition: 'periodic' or 'reflection' |
| FFlag    | The FastFlag condition of wavelet decomposition: True or False              |

**Value**

- WaveletSeries - The wavelet transform of the series

**References**

- Aminghafari, M. and Poggi, J.M. 2007. Forecasting time series using wavelets. *International Journal of Wavelets, Multiresolution and Information Processing*, 5, 709 to 724
- Percival D. B. and Walden A. T. 2000. *Wavelet Methods for Time-Series Analysis*. Cambridge Univ. Press, U.K.
- Paul R. K., Prajneshu and Ghosh H. 2013. Wavelet Frequency Domain Approach for Modelling and Forecasting of Indian Monsoon Rainfall Time-Series Data. *Journal of the Indian society of agricultural statistics*, 67, 319 to 327.

**Examples**

```
data<-rnorm(100,mean=100,sd=50)
Wavelet<-WaveletFitting(ts=data,Wvlevels=3,WFilter='haar',bndry='periodic',FFlag=TRUE)
```

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WaveletFittingsvr      *Wavelet-SVR Hybrid Model for Forecasting*

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### Description

The main aim of this package is to combine the advantage of wavelet and Support Vector Regression (SVR) models for time series forecasting. This package also gives the accuracy measurements in terms of Root Mean Square Error (RMSE) and Mean Absolute Prediction Error (MAPE).

### Usage

```
WaveletFittingsvr(
  ts,
  tlag = ACF,
  Waveletlevels,
  WaveletFilter = "haar",
  boundary = "periodic",
  FastFlag = TRUE,
  SplitRatio = 0.8
)
```

### Arguments

|               |  |
|---------------|--|
| ts            | Univariate time series   |
| tlag          | Number of lags   |
| Waveletlevels | The level of wavelet decomposition                             |
| WaveletFilter | Wavelet filter use in the decomposition                        |
| boundary      | The boundary condition of wavelet decomposition                |
| FastFlag      | The FastFlag condition of wavelet decomposition: True or False |
| SplitRatio    | Training and testing data split                                |

### Value

- TrainFittedValue - Fitted value of train data
- TestPredictedValue - Predicted value of test data
- AccuracyTable - RMSE and MAPE of train and test data

### References

- Aminghafari, M. and Poggi, J.M. 2007. Forecasting time series using wavelets. *International Journal of Wavelets, Multiresolution and Information Processing*, 5, 709 to 724
- Percival, D. B. and Walden A. T. 2000. *Wavelet Methods for Time-Series Analysis*. Cambridge Univ. Press, U.K.

- Paul, R. K., Prajneshu and Ghosh H. 2013. Wavelet Frequency Domain Approach for Modelling and Forecasting of Indian Monsoon Rainfall Time-Series Data. Journal of the Indian society of agricultural statistics, 67, 319 to 327.
- Paul, R. K. and BIRTHAL, P.S. 2015. Investigating rainfall trend over India using wavelet technique. Journal of Water and Climate Change, 7, 365 to 378.
- Paul, R. K. 2015. ARIMAX-GARCH-WAVELET Model for forecasting volatile data. Model Assisted Statistics and Application, 10, 243 to 252.
- Raimundo, M. S. and Okamoto, J. 2018. SVR-wavelet adaptive model for forecasting financial time series. International Conference on Information and Computer Technologies (ICICT), 111-114, doi: 10.1109/INFOCT.2018.8356851.

**Examples**

```
data<-rnorm(100,mean=100,sd=50)
WSVR<-WaveletFittingsvr(ts=data,tlag=2,Waveletlevels=3)
```

# Index

WaveletFitting, [2](#)  
WaveletFittingsvr, [3](#)