Package ‘WaveletArima’

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Type Package
Title Wavelet ARIMA Model
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WaveletFitting Wavelet transform using Maximal overlap discrete wavelet transform (MODWT) algorithm

Description

Transforms the time series data by using hybrid MODWT algorithm using 'haar' filter.

Usage

WaveletFitting(ts,Wlevels,bndry,FFlag)
WaveletFittingarma

Arguments

   ts       univariate time series
   wlevels  The level of wavelet decomposition
   bndry    The boundary condition of wavelet decomposition
   fflag    The FastFlag condition of wavelet decomposition: True or False

Value

   WaveletFitting  The wavelet transform of the series

References


Examples

   N <- 100
   PHI <- 0.2
   THETA <- 0.1
   SD <- 1
   M <- 0
   D <- 0.2
   Seed <- 123

   set.seed(Seed)
   Sim.Series <- fracdiff::fracdiff.sim(n = N, ar = c(PHI), ma = c(THETA),
                                      d = D, rand.gen = rnorm, sd = SD, mu = M)
   simts <- as.ts(Sim.Series$series)
   Waveletlevels <- floor(log(length(simts))) # to obtain the maximum level for wavelet decomposition
   WS <- WaveletFitting(ts=simts,wlevels=Waveletlevels,bndry='periodic',fflag=TRUE)$WaveletSeries

WaveletFittingarma  Wavelet-ARIMA hybrid model for forecasting

Description

Fits the time series data by using hybrid Wavelet-ARIMA algorithm.
Usage

```
WaveletFittingarma(ts, Waveletlevels, boundary, FastFlag, MaxARParam, MaxMAParam, NForecast)
```

Arguments

- **ts**: univariate time series
- **Waveletlevels**: The level of wavelet decomposition
- **boundary**: The boundary condition of wavelet decomposition
- **FastFlag**: The FastFlag condition of wavelet decomposition: True or False
- **MaxARParam**: The maximum AR order for auto.arima
- **MaxMAParam**: The maximum MA order for auto.arima
- **NForecast**: The forecast horizon: A positive integer

Value

```
WaveletFittingarma
```

The forecast of the series

References


Examples

```r
N <- 100
PHI <- 0.2
THETA <- 0.1
SD <- 1
M <- 0
D <- 0.2
Seed <- 123

set.seed(Seed)
Sim.Series <- fracdiff::fracdiff.sim(n = N, ar = c(PHI), ma = c(THETA),
                                     d = D, rand.gen = rnorm, sd = SD, mu = M)
simts <- as.ts(Sim.Series$series)
```
WaveletForecast <- WaveletFittingarma(ts = simts, Waveletlevels = floor(log(length(simts)))), boundary = 'periodic', FastFlag = TRUE, MaxARParam = 5, MaxMAParam = 5, NForescast = 5)
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