Package ‘WaveletArima’

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Type Package
Title Wavelet ARIMA Model
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R topics documented:

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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)
Arguments

- `ts`: univariate time series
- `wvlevels`: 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

```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$series)
Waveletlevels <- floor(log(length(simts))) # to obtain the maximum level for wavelet decomposition
WS <- WaveletFitting(ts=simts,wvlevels=Waveletlevels,bndry='periodic',FFlag=TRUE)$WaveletSeries
```

Description

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

Usage

WaveletFitting arma(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

WaveletFitting arma
The forecast 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
WaveletForecast<-WaveletFittingarma(ts=simts, Waveletlevels=floor(log(length(simts))), boundary='periodic', FastFlag=TRUE, MaxARParam=5, MaxMAParam=5, NForecast=5)
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