Package ‘scorepeak’

August 21, 2019

Type Package
Title Peak Functions for Peak Detection in Univariate Time Series
Version 0.1.2
Maintainer Shota Ochi <shotaochi1990@gmail.com>
License GPL-3
Depends R (>= 3.5.0)
Imports checkmate (>= 1.9.1), Rcpp (>= 1.0.0)
Suggests knitr, rmarkdown, testthat (>= 2.0.0), cluster
URL https://github.com/ShotaOchi/scorepeak
BugReports https://github.com/ShotaOchi/scorepeak/issues
NeedsCompilation yes
LinkingTo Rcpp
LazyData true
RoxygenNote 6.1.1
VignetteBuilder knitr
Encoding UTF-8
Author Shota Ochi [aut, cre, cph]
Repository CRAN
Date/Publication 2019-08-21 08:20:02 UTC

R topics documented:

  building_blocks ......................................................... 2
detect_localmaxima ......................................................... 3
eegca102 ................................................................. 4
peak_functions ............................................................. 4
scorepeak ................................................................. 5
Building Blocks of Peak Functions

Description

Computes max, min, mean, and standard deviation of temporal neighbors.

Usage

max_neighbors(data, w, side, boundary = "reflecting")
min_neighbors(data, w, side, boundary = "reflecting")
mean_neighbors(data, w, side, boundary = "reflecting")
sd_neighbors(data, w, side, boundary = "reflecting")

Arguments

data a numeric vector. Length of data must be greater than 1.
w window size. w must be odd and greater than 2 and smaller than double length of data.
side determines which side of neighbors of data point will be used in calculation. "left", "l": left temporal neighbors, "right", "r": right temporal neighbors, "both", "b": left and right temporal neighbors, "all", "a": data point and its left and right temporal neighbors.
boundary determines how data points in the beginning and end of the time series will be treated. "reflecting", "r": reflecting boundary condition, "periodic", "p": periodic boundary condition, "discard", "d", discarding data points in the beginning and end of the time series. See the vignette "Introduction to scorepeak" for detail.

Value

a numeric vector

Author(s)

Shota Ochi

Examples

data("ecgca102")
max_neighbors(ecgca102, 11, "all")
min_neighbors(ecgca102, 11, "all")
mean_neighbors(ecgca102, 11, "all")
sd_neighbors(ecgca102, 11, "all")
**detect_localmaxima**  
*detect local maxima in univariate time series data*

### Description

detect local maxima in univariate time series data

### Usage

detect_localmaxima(data, w = 3, boundary = "reflecting")

### Arguments

data  
a numeric vector. Length of data must be greater than 1.

w  
window size. w must be odd and greater than 2 and smaller than double length of data.

boundary  
determines how data points in the beginning and end of the time series will be treated. "reflecting", "r": reflecting boundary condition, "periodic", "p": periodic boundary condition, "discard", "d", discarding data points in the beginning and end of the time series. See the vignette "Introduction to scorepeak" for detail.

### Value

a logical vector. TRUE indicates local peak. FALSE indicates not local peak.

### Author(s)

Shota Ochi

### Examples

data("ecgca102")
peaks <- detect_localmaxima(ecgca102)
plot(ecgca102, type = "l")
points(which(peaks), ecgca102[peaks], pch = 1, col = "red")
ecgca102  

**Time Series Data of Electrocardiogram**

**Description**

This data is a part of ecgca102.edf file of Non-Invasive Fetal Electrocardiogram Database.

**Usage**

```r
data("ecgca102")
```

**Format**

a numeric vector

**Source**

Non-Invasive Fetal Electrocardiogram Database (https://doi.org/10.13026/C2X30H)

**References**


---

peak_functions  

**Peak Functions for Peak Detection in Univariate Time Series**

**Description**

scorepeak package provides several types of peak function. See the vignette "Introduction to scorepeak" for detail.

**Usage**

```r
score_type1(data, w, boundary = "reflecting")
score_type2(data, w, boundary = "reflecting")
score_type3(data, w, boundary = "reflecting")
```
scorepeak

Description

scorepeak provides peak functions and its building blocks. Peak functions enable us to detect peaks.

Arguments

data  a numeric vector. Length of data must be greater than 1.
w    window size. w must be odd and greater than 2 and smaller than double length of data.
boundary determines how data points in the beginning and end of the time series will be treated. "reflecting", "r": reflecting boundary condition, "periodic", "p": periodic boundary condition, "discard", "d", discarding data points in the beginning and end of the time series. See the vignette "Introduction to scorepeak" for detail.

Value

a numeric vector

Author(s)

Shota Ochi

Examples

data("ecgca102")
plot(ecgca102, type = "l", ylim = c(-0.38, 0.53))
points(seq(length(ecgca102)), score_type1(ecgca102, 51), col = "red", type = "l")
points(seq(length(ecgca102)), score_type2(ecgca102, 51), col = "blue", type = "l")
points(seq(length(ecgca102)), score_type3(ecgca102, 51), col = "green", type = "l")
Index

*Topic** datasets
  ecgca102, 4

building_blocks, 2
detect_localmaxima, 3
ecgca102, 4

max_neighbors (building_blocks), 2
mean_neighbors (building_blocks), 2
min_neighbors (building_blocks), 2

peak_functions, 4

score_type1 (peak_functions), 4
score_type2 (peak_functions), 4
score_type3 (peak_functions), 4
scorepeak, 5
scorepeak-package (scorepeak), 5
sd_neighbors (building_blocks), 2