Package: ChangePointTaylor (via r-universe)

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Type Package

Title Identify Changes in Mean

Version 0.3

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Description A basic implementation of the change in mean detection method outlined in: Taylor, Wayne A. (2000) <https://variation.com/wp-content/uploads/change-point-analyzer/change-point-analysis-a-powerful-new-tool-for-detecting-changes.pdf>. The package recursively uses the mean-squared error change point calculation to identify candidate change points. The candidate change points are then re-estimated and Taylor's backwards elimination process is then employed to come up with a final set of change points. Many of the underlying functions are written in C++ for improved performance.

License GPL (>= 2)

Imports Rcpp (>= 1.0.4), dplyr, purrr, tidyr, magrittr, rlang

LinkingTo Rcpp

LazyData true

RoxygenNote 7.3.2

Suggests knitr, rmarkdown, ggplot2, bench

VignetteBuilder knitr

Encoding UTF-8

NeedsCompilation yes

Author Michael Marks [aut, cre]

Depends R (>= 3.5.0)

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Repository https://mmarks13.r-universe.dev

RemoteUrl https://github.com/mmarks13/changepointtaylor

RemoteRef HEAD

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Identify Changes in Mean

Description

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Details

ChangePointTaylor

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Author(s)

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`change_point_analyzer` *change_point_analyzer*

Description

a simple implementation of the change in mean detection methods developed by Wayne Taylor and utilized in his Change Point Analyzer software. The package recursively uses the 'MSE' change point calculation to identify candidate change points. Taylor's backwards elimination process is then employed to come up with a final set of change points.

Usage

```
change_point_analyzer(
  x,
  labels = NA,
  n_bootstraps = 1000,
  min_candidate_conf = 0.5,
  min_tbl_conf = 0.9,
  CI = 0.95
)
```

Arguments

x	a numeric vector
labels	a vector the same length as x. Will generate labels for the change points in the output dataframe.
n_bootstraps	an integer value. Determines the number of bootstraps when calculating the change confidence level.
min_candidate_conf	a value between 0 and 1. The minimum change confidence level to become a candidate change point before re-estimation and backwards elimination.
min_tbl_conf	a value between 0 and 1. The minimum change confidence level below which a candidate change point will be eliminated after re-estimation and backwards elimination.
CI	a value between 0 and 1. The value of the confidence interval.

Value

a dataframe containing the change points, their confidence levels, and other relevant information

References

Taylor, W. A. (2000). Change-point analysis: a powerful new tool for detecting changes.

Examples

```
x <- US_Trade_Deficit$deficit_billions
label_vals <- US_Trade_Deficit$date

change_point_analyzer(x)

change_point_analyzer(x, label = label_vals)

change_point_analyzer(x, label = label_vals, n_bootstraps = 10000)

change_point_analyzer(x, label = label_vals, min_candidate_conf = 0.66,  min_tbl_conf = 0.95)
```

`US_Trade_Deficit` *US Trade Deficit Data: 1987-1988.*

Description

A replication of the US Trade Deficit data used in Taylor's manuscript.

Usage

```
US_Trade_Deficit
```

Format

A data frame with 24 rows and 2 variables:

date observation month

deficit_billions US trade deficit in billions of dollars ...

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