

Package ‘ChangePointTaylor’

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Type Package

Title Identify Changes in Mean

Version 0.3

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Maintainer Michael Marks <michaelmarks@analyticaconsulting.com>

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)

Repository CRAN

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ChangePointTaylor-package
<i>Identify Changes in Mean</i>

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.

Details

ChangePointTaylor

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.

Author(s)

Michael Marks <michaelmarks@analyticaconsulting.com>

change_point_analyzer	<i>change_point_analyzer</i>
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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	<i>US Trade Deficit Data: 1987-1988.</i>
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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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