

Package ‘onlineBcp’

November 22, 2021

Type Package

Title Online Bayesian Methods for Change Point Analysis

Version 0.1.3

Description It implements the online Bayesian methods for change point analysis. It can also perform missing data imputation with methods from 'VIM'. The reference is Yigiter A, Chen J, An L, Danacioglu N (2015) <[doi:10.1080/02664763.2014.1001330](https://doi.org/10.1080/02664763.2014.1001330)>.

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Depends R (>= 3.1.0)

Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

Imports VIM

Suggests testthat

NeedsCompilation no

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Repository CRAN

Date/Publication 2021-11-22 19:20:02 UTC

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aCGH	<i>Transformed aCGH data</i>
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Description

A dataset containing the tranformed aCGH data from the genome of the fibroblast cell line GM02948

Usage

aCGH

Format

A data frame with 2046 rows and 1 variable:

transNorm normalized aCGH intensity

cnv_H2347	<i>GC-corrected data for copy number variation</i>
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Description

A dataset containing the raw data and GC-corrected/normalized data

Usage

cnv_H2347

Format

A data frame with 14189 rows and 2 variables:

raw.count raw read counts

normalized.count normalized read counts

combine	<i>Combine two BayesCP objects</i>
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Description

Combine two BayesCP objects

Usage

```
combine(bcp1, bcp2)
```

Arguments

bcp1	the first BayesCP object to be combined
bcp2	the second BayesCP object to be combined

Value

The combined BayesCP object

covid	<i>US COVID-19 data</i>
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Description

A dataset containing new daily cases in the United States downloaded from the World Health Organization on August 25, 2020

Usage

```
covid
```

Format

A data frame with 219 rows and 8 variables

Date_reported The report date
Country_code The code for country
Country Country in full name
WHO_region Geographic region defined by WHO
New_cases New COVID-19 cases
Cumulative_cases Cumulative COVID-19 cases
New_deaths New COVID-19 deaths
Cumulative_deaths Cumulative COVID-19 deaths

 imputation

Impute missing data

Description

Impute missing data

Usage

```
imputation(x, method = c("Median", "kNN"))
```

Arguments

x	the normalized data with missing
method	the imputation method

Value

The vector of imputed data with no missing values

 online_cp

Online change point detection algorithm for normally distributed data.

Description

Online change point detection algorithm for normally distributed data.

Usage

```
online_cp(x, theta = 0.9, alpha = 1, beta = 1, th_cp = 0.5)
```

Arguments

x	the normalized data
theta	the probability of occurrence of a change point, default 0.9
alpha	the hyperparameter of posterior distribution, default 1.0
beta	the hyperparameter of posterior distribution, default 1.0
th_cp	threshold level for the posterior distribution of change point, default 0.5

Value

An object of the BayesCP class

plot.BayesCP	<i>Plot BayesCP object</i>
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Description

Plot BayesCP object

Usage

```
## S3 method for class 'BayesCP'
plot(x, xlab = "Index", ylab = "x", ...)
```

Arguments

x	the BayesCP class object to be plotted
xlab	the default x-axis label, default "Index"
ylab	the default y-axis label, default "x"
...	the plotting parameters passed to plot()

Value

No return value, called for side effects

summary.BayesCP	<i>Summarize BayesCP object</i>
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Description

Summarize BayesCP object

Usage

```
## S3 method for class 'BayesCP'
summary(object, norm.test = FALSE, ...)
```

Arguments

object	the BayesCP class object to be summarized
norm.test	logical value for normality test, default is false
...	parameters passed to summary()

Value

An object of BayesCP class with updated summary result

Examples

```
x <- c(rnorm(10, 0, 1), rnorm(10, 5, 1))  
bcp <- online_cp(x)  
summary(bcp)
```

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