

Package ‘MIDASwrapper’

April 10, 2020

Type Package

Title Microcluster-Based Detector of Anomalies in Edge Streams

Version 0.5.1

Date 2020-04-07

Author Tobias Heidler

Maintainer Tobias Heidler <tobias.heidler@gmail.com>

Description This is a wrapper around the C++ implementation of 'MIDAS' (Bhatia et al., 2020) <<https://www.comp.nus.edu.sg/~sbhatia/assets/pdf/midas.pdf>> by Siddharth Bhatia for graph like data.

Language en-US

License Apache License (>= 2)

Imports Rcpp (>= 1.0.4)

LinkingTo Rcpp

RoxygenNote 7.0.2

URL <https://github.com/pteridin/MIDASwrapper>

BugReports <https://github.com/pteridin/MIDASwrapper/issues>

Depends R (>= 3.4)

Encoding UTF-8

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation yes

Repository CRAN

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MIDASwrappeR-package *Microcluster-Based Detector of Anomalies in Edge Streams*

Description

This is a wrapper around the C++ implementation of 'MIDAS' (Bhatia et al., 2020) <<https://www.comp.nus.edu.sg/~sbhatia/a>> by Siddharth Bhatia for graph like data.

Details

The DESCRIPTION file:

```
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Title:       Microcluster-Based Detector of Anomalies in Edge Streams
Version:     0.5.1
Date:       2020-04-07
Author:      Tobias Heidler
Maintainer:  Tobias Heidler <tobias.heidler@googlemail.com>
Description: This is a wrapper around the C++ implementation of 'MIDAS' (Bhatia et al., 2020) <https://www.comp.nu>
Language:    en-US
License:     Apache License (>= 2)
Imports:     Rcpp (>= 1.0.4)
LinkingTo:   Rcpp
RoxygenNote: 7.0.2
URL:         https://github.com/pteridin/MIDASwrappeR
BugReports:  https://github.com/pteridin/MIDASwrappeR/issues
Depends:     R (>= 3.4)
Encoding:    UTF-8
Suggests:    knitr, rmarkdown
VignetteBuilder: knitr
```

Index of help topics:

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                        An artificial dataset with sudden edge shift
                        around at entry 9.000
MIDASexample           Dataset provided by the original C++
                        implementation of MIDAS
MIDASwrappeR-package  Microcluster-Based Detector of Anomalies in
                        Edge Streams
getMIDASScore          Get the MIDAS score
```

This section should provide a more detailed overview of how to use the package, including the most important functions.

Author(s)

Tobias Heidler

Maintainer: Tobias Heidler <tobias.heidler@googlemail.com>

References

This optional section can contain literature or other references for background information.

See Also

Optional links to other man pages

Examples

```
## Optional simple examples of the most important functions
## Use \dontrun{} around code to be shown but not executed
```

ArtificialDistributionChange

An artificial dataset with sudden edge shift around at entry 9.000

Description

An artificial dataset with sudden edge shift around at entry 9.000

Usage

```
data(ArtificialDistributionChange)
```

Format

A "data.frame" formatted for direct use within "getMIDASscore()"

Source

```
data.frame(src = rep(1,100000), dst = c(as.integer(rexp(n = 90000, rate = .65)) + 2, as.integer(abs(rnorm(10000,
8, .7))) + 1), times = unlist(lapply(c(1:1000), rep, times=100)))
```

References

None

Examples

```
data(ArtificialDistributionChange)
plot(getMIDASscore(ArtificialDistributionChange))
```

getMIDASScore	<i>Get the MIDAS score</i>
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Description

Get the MIDAS score

Usage

```
getMIDASScore(
  input,
  rows = 2L,
  buckets = 769L,
  alpha = 0.6,
  norelations = FALSE,
  undirected = FALSE
)
```

Arguments

input	A data.frame with columns src (source, int), dst (destination, int) & times (timestamp of the edge, int) representing transaction edges
rows	Number of rows/hash functions. Default is 2
buckets	Number of buckets. Default is 769
alpha	Temporal Decay Factor. Only used when 'MIDAS-R' is used. Default is 0.6
norelations	Run 'MIDAS' instead of 'MIDAS-R'. Default is False
undirected	If graph is undirected. Default is False

Value

NumericVector of MIDAS-Scores

MIDASexample	<i>Dataset provided by the original C++ implementation of MIDAS</i>
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Description

Dataset provided by the original C++ implementation of MIDAS

Usage

```
data(MIDASexample)
```

Format

A data.frame formatted for direct use within "getMIDASScore()"

Source

[Github](#)

References

Siddharth Bhatia, Bryan Hooi, Minji Yoon, Kijung Shin, Christos Faloutsos. AAI 2020. ([AAAI](#))

Examples

```
data(MIDASexample)
plot(getMIDASScore(head(MIDASexample, 10000)))
```

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