

# Package ‘MIDASwrappE’

October 12, 2022

**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@googlemail.com>

## Description

This is a wrapper around the C++ implementation of 'MIDAS' (Bhatia et al., 2020) <<https://www.comp.nus.edu.sg/~sbbhatia/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/MIDASwrappE>

**BugReports** <https://github.com/pteridin/MIDASwrappE/issues>

**Depends** R (>= 3.4)

**Encoding** UTF-8

**Suggests** knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** yes

**Repository** CRAN

**Date/Publication** 2020-04-10 10:10:03 UTC

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

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## 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:

```
Package:          MIDASwrappeR
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@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
```

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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
```

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ArtificialDistributionChange

*An artificial dataset with sudden edge shift around at entry 9.000*

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**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))
```

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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

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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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