Package 'activityCounts'

April 7, 2025

Type Package

Title Generate ActiLife Counts

Version 0.2.1

Description ActiLife software generates activity counts from data collected by Actigraph accelerometers <https://s3.amazonaws.com/actigraphcorp.com/wp-content/uploads/2017/11/26205758/ActiGraph-White-Paper_What-is-a-Count_.pdf>.
Actigraph is one of the most common research-
grade accelerometers. There is considerable research
validating and developing algorithms for human activity using ActiLife counts. Unfortunately,
ActiLife counts are proprietary and difficult to implement if researchers use different accelerometer brands.
The code creates ActiLife counts from raw acceleration data for different accelerometer brands and it is developed
based on the study done by Brond and others (2017) <doi:10.1249/MSS.0000000000001344>.

URL https://github.com/walkabillylab/activityCounts,

https://github.com/jbrond/ActigraphCounts

BugReports https://github.com/walkabillylab/activityCounts/issues

Depends R (>= 2.10)

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

Suggests knitr, rmarkdown, ggplot2, testthat (>= 3.0.0)

VignetteBuilder knitr

Imports seewave, signal, tibble, lubridate, magrittr

Config/testthat/edition 3

NeedsCompilation no

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Contents

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counts   *counts*

Description

Calculates ActiLife counts based on raw accelerometer data

Usage

```
counts(
  data,
  hertz = -1,
  x_axis = 2,
  y_axis = 3,
  z_axis = 4,
  time_column = -1,
  start_time = -1
)
```

Arguments

data	Accelerometer data, Must have at least three columns.
hertz	Sampling frequency in Hz
x_axis	Indicates the column number which has the accel data for x direction, the default is 2
y_axis	Indicates the column number which has the accel data for y direction, the default is 3
z_axis	Indicates the column number which has the accel data for z direction, the default is 4

time_column   Optional. Indicates the column number which has the date and time. The first row will be considered as the start time of the study. You can use the "start_time" argument to provide the start time explicitly.

start_time   Optional. Use this to define the start time of the experiment. You can use this argument if the data does not contain a time column.

Value

Returns a `data.table` with four columns:

Time The start time of the measurement

x the number of counts for X axis

y the number of counts for Y axis

z the number of counts for Z axis

See Also

sampleXYZ raw accelerometer data for testing `counts()` function.

sampleCounts counts calculated by `activityCounts` and ActiLife

Examples

```
# for tha sampleXYZ dataset, sampling frequency is 100 Hz
counts(data = sampleXYZ, hertz = 100)

# when start time is given explicitly
study_start_time <- "2017-08-22 12:30:10"
counts(data = sampleXYZ, hertz = 100 , start_time = study_start_time)

# the data has a time column, which is the first column
counts(data = sampleXYZ, hertz = 100 , time_column = 1)

# explicitly specify the X, Y and Z axis columns.
counts(data = sampleXYZ, hertz = 100 , x_axis = 2,y_axis = 3, z_axis = 4)
```

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pptrunc	*pptrunc*

Description

pptrunc

Usage

```
pptrunc(data, max_value)
```

Arguments

`data`	The variable that will be truncated
`max_value`	The upper bound (-max_value is the lower bound)

Value

the highest(or the lowest) value of "data" and "max_value"

`runsum`	*runsum*

Description

runsum

Usage

```
runsum(data, len, threshold)
```

Arguments

`data`	input data
`len`	the length
`threshold`	the threshold

Value

returns a

`sampleCounts`	*The counts calculated by activityCounts and ActiLife based on in-cluded raw accelerometer data*

Description

A simple `data.table` which its first row is measurement time. Then for each time step, counts are calculated by `activityCounts` and the ActiLife software. The counts are calculated based on included `sampleXYZ` dataset, which its sampling frequency is 100H.

Usage

```
sampleCounts
```

Format

A data.table with nine columns:

Time Date and time

activityCounts_x_counts counts calculated by counts() function in X direction

activityCounts_y_counts counts calculated by counts() function in Y direction

activityCounts_z_counts counts calculated by counts() function in Z direction

ActiLife_x_counts counts calculated by ActiLife software in X direction

ActiLife_y_counts counts calculated by ActiLife software in Y direction

ActiLife_z_counts counts calculated by ActiLife software in Z direction

See Also

counts to see how to produce counts.

sampleXYZ raw accelerometer data for testing counts() function.

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sampleXYZ   *Raw accelerometer data for the activityCounts package*

Description

A simple data.table that contains raw accelerometer data for testing the counts function. Sampling frequency of this data.table is 100Hz, therefore pass 100 as the second argument when using the counts function.

Usage

```
sampleXYZ
```

Format

A data.table with four columns:

Time Timestamp

accelerometer_X accelerometer data in X direction

accelerometer_Y accelerometer data in Y direction

accelerometer_Z accelerometer data in Z direction

See Also

counts to see how to produce counts.

sampleCounts counts calculated by activityCounts and ActiLife

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trunc   *trunc*

Description

trunc

Usage

```
trunc(data, min_value)
```

Arguments

data   The input variable which will be altered if less than the threshold

min_value   the threshold which the input below it will be set to zero

Value

returns zero if the "data" is less than the "mean_value" otherwise returns the "data"

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