Package 'pupilParse'

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Type Package

Title pupilParse

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Maintainer Who to complain to <yourfault@somewhere.net>

Description Collection of helper functions for pupillometry

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LazyData TRUE

RoxygenNote 5.0.1

Suggests knitr,
    rmarkdown

VignetteBuilder knitr

depends data.table

imports stats,zoo,pracma,data.table

R topics documented:

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pupilParse-package   *pupilParse*

Description

helper functions for processing pupillometry data

Details

this is a collections of functions that have been bundled together for easier access and sharing the content of the present package is currently of alpha quality - use at your own risk

Examples

```
data(pupilsamples)
pupilsamples = pupilPrepare(pupilsamples)
```

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pupilBlinkInterpolator

pupilBlinkInterpolator

Description

see also ?zoo::na.approx

Usage

```
pupilBlinkInterpolator(data, buffer = 5)
```

Arguments

x	A number.
y	A number.

Value

The sum of x and y.

Examples

```
add(1, 1)
add(10, 1)
```

pupilCleaner   *pupilCleaner*

Description

Attempts to clean the pupil data by removing and interpolating over extreme sample values

Usage

```
pupilCleaner(data, MinimumPupilSize = 2, MaximumPupilSize = 8,
  SDLimit = 3)
```

Arguments

data	data.table from pupilPrepare
MinimumPupilSize	
	remove values less than this value
MaximumPupilSize	
	remove values greater than this value
SDLimit	outlier limits in standard deviations

Details

May help for datasets with extreme deviations

Value

NULL (data.table processed in place)

Examples

```
pupilCleaner(pupilsamples)
```

pupilNormalizer   *pupilNormalizer*

Description

normalizes pupilsizes according to a specified baseline ((pupilsize - baselinesize)/baselinesize)*100

Usage

```
pupilNormalizer(data, baseline)
```

Arguments

data	a data.table
baseline	a TrialTime range to use for baseline

Value

processes the data.table in place

Examples

```
pupilNormalizer(data, c(100,1000))
```

---

pupilPrepare	*pupilPrepare*

Description

prepare a data.frame for processing with the functions in this package.

Usage

```
pupilPrepare(data, subjectsColumn = "Subject", trialsColumn = "Trial",
  pupilSizeLeftColumn = "L.Mapped.Diameter..mm.",
  pupilSizeRightColumn = "R.Mapped.Diameter..mm.", samplingFrequency = 60,
  normalizeTrialDurations = TRUE)
```

Arguments

data	a data.frame or data.table with pupil samples in rows
subjectsColumn	name of column with subject identifiers
trialsColumn	name of column with trial identifiers
pupilSizeLeftColumn	
	name of column with left pupil size
pupilSizeRightColumn	
	name of column with right pupil size
samplingFrequency	
	sampling frequency of the eye-tracker (samples per second)

Value

a data table with specific columns

Examples

```
data(pupilsamples)
pupilPrepare(pupilsamples, subjectsColumn = "Subject", trialsColumn = "Trial", pupilSizeLeftColumn = "L.Mapp
```

pupilPreprocess *pupilPreprocess*

Description

Not implemented.

Usage

```
pupilPreprocess(data)
```

Arguments

data   a prepared data.table

Examples

```
pupilPreprocess(data)
```

pupilSmoother *pupilSmoother*

Description

pupilSmoother

Usage

```
pupilSmoother(...)
```

Arguments

...   params for the smoothing method

data   a prepared data.table

Value

processes the data.table in place

Examples

```
pupilSmoother(data)
```

---

pupilSmoother_Hampel   *pupilSmoother_Hampel*

Description

Hampel Filter

Usage

```
pupilSmoother_Hampel(data, Hampel_k = 15, Hampel_t0 = 1)
```

Arguments

data	a prepared data.table
Hampel_k	window length
Hampel_t0	threshold

Details

see ?pracma::hampel

Value

processes the data.table in place

Examples

```
pupilSmoother_Hampel(data)
```

---

pupilSmoother_Loess   *pupilSmoother_Loess*

Description

Local Polynomial Regression Fitting

Usage

```
pupilSmoother_Loess(data, Loess_degree = 2, Loess_span = 0.17)
```

Arguments

data	prepared data.table
Loess_degree	the degree of the polynomials to be used
Loess_span	degree of smoothing

Details

see ??stats::loess

Value

processes the data.table in place

Examples

```
pupilSmoother_Loess(data)
```

---

pupilSmoother_Lowess   *pupilSmoother_Lowess*

Description

see ?stats::lowess

Usage

```
pupilSmoother_Lowess(data, Lowess_f = 0.1, Lowess_iter = 3L,
  Lowess_delta = 0.01)
```

Arguments

data	a data.table
Lowess_f	the smoother span
Lowess_iter	the number of robustifying iterations
Lowess_delta	defaults to 1/100th of the range of x

Value

processes the data.table in place

Examples

```
pupilSmoother_Lowess(data)
```

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