

Package ‘monitor’

May 11, 2016

Title Vibration signal monitor for wind turbine generators.

Version 0.1

Description A package for monitoring vibration signals from wind turbine generators. The data should include time stamps as first column, and also have at least one observed load variable, such as generator speed or power.

Depends R (>= 3.2.3)

License none

LazyData true

VignetteBuilder knitr

RoxygenNote 5.0.1

Imports dplyr, ggplot2

Suggests knitr, rmarkdown

R topics documented:

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identify_WTs_func	<i>Identifies the wind turbines if several unit IDs appear.</i>
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Description

Identifies the wind turbines if there are several unit IDs, and returns the same data in a list containing dataframes for each unit ID, and the time stamps are converted to POSIXct class.

Usage

```
identify_WTs_func(dataframe, id = names(dataframe[1]))
```

Arguments

dataframe	A data frame containing the data from condition monitoring.
id	The name as a character of the column with unit IDs.

Value

The data in dataframe sorted by id into a list containing dataframes, one for each wind turbines, and the time stamps are converted to POSIXct class.

Examples

```
identify_WTs_func(data, id = "UnitID")
```

```
interpolate_func_2mins
```

Interpolation function using intervals of 2 minutes.

Description

The interpolation of a single wind turbine with an interval length of 2 minutes. If there is missing data in intervals larger than 10 minutes no interpolation is done, and NAs are added.

Usage

```
interpolate_func_2mins(dataframe, var = "PowerActual")
```

Arguments

dataframe	A dataframe containing a single wind turbine case.
var	The variable to be interpolated.

Value

A new dataframe similar to the existing where the var has been interpolated using 2 minutes intervals.

Examples

```
interpolate_func_2mins(data, var = "GeneratorSpeed")
```

```
kalman_filter_arma
```

Kalman filter applied to a univariate stationary zero-mean ARMA process.

Description

The dynamic linear model, is on the form, where $y_t = Fx_t$ is the observation equation and $x_t = Gx_{t-1} + Hw_t$ is the state equation, and $Q = \text{Var}(Hw_t)$.

Usage

```
kalman_filter_arma(ts, F, G, Q, m0, C0)
```

Arguments

ts	A univariate time series with zero mean
F	The coefficient matrix in the observation equation, as shown above.
G	The matrix in the state equation as shown above.
Q	The variance matrix of the state equation.
m0	The initial value of x_t .
C0	The initial value of the state variance.

Value

The innovations, the standardized residual process and the predicted values.

Examples

```
kalman_filter_arma(ts = data, F=F, G=G, Q=Q, m0=m0, C0=C0)
```

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