Package 'WindCurves'

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Type Package

Title Tool to Fit Wind Turbine Power Curves

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Author Neeraj Bokde, Andres Feijoo

Maintainer Neeraj Bokde <neerajdhanraj@gmail.com>

Description Provides a tool to fit and compare the wind turbine power curves with successful curve fitting techniques. Facilitates to examine and compare the performance of a user-defined power curve fitting techniques. Also, provide features to generate power curve discrete points from a graphical power curves. Data on the power curves of the wind turbine from major manufacturers are provided.

Imports methods, readbitmap, grid

License GPL

URL https://www.neerajbokde.in/viggnette/2021-10-14-WindCurves/

Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

Suggests knitr, rmarkdown

VignetteBuilder knitr

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`fitcurve` *A fitcurve function*

Description

Fits the power curve with Weibull CDF, Logistic and user defined techniques

Usage

```
fitcurve(data, MethodPath, MethodName)
```

Arguments

`data`	as input data.frame with two columns, i.e., wind speed and wind power
`MethodPath`	as path of a code for user defined curve fitting technique
`MethodName`	as name of the user defined curve fitting technique

Value

fitted curves and corresponding discrete fitted values

Examples

```
data(pcurves)
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
fitcurve(da)
```

`img2points` *A function to capture Speed Vs Power discrete points from power curve image*

Description

A function to capture Speed Vs Power discrete points from power curve image

Usage

```
img2points(imagePath, n)
```

Arguments

`imagePath`	as Path of a power curve image
`n`	as number of points to be captured from the curve image (default value is 15)

Value

data.frame with two columns, i.e., wind speed and wind power

Examples

```
## Not run:
# to import image from system 'extdata' folder.
# user can directly specify the path of the image in 'img2points()'.
imagePath <- system.file("extdata","powercurve.jpeg", package="WindCurves")
img2points(imagePath)
## End(Not run)
```

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pcurves *Wind Turbine Power Curves*

Description

Data on the power curves of wind turbine from four major manufacturers: Siemens, Vestas, RE-power and Nordex. Represents wind turbine power output in 'kW' against wind speed in 'metres per second'.

Usage

```
data(pcurves)
```

Format

An object of class `data.frame` with 25 rows and 7 columns.

Source

https://goo.gl/tD2JW6

References

Iain Staffell (2012) https://goo.gl/tD2JW6

Examples

```
data(pcurves)
v <- pcurves$`Vestad V80`
```

plot.fitcurve *A function to plot the curves fitted with fitcurve() function*

Description

A function to plot the curves fitted with fitcurve() function

Usage

```
## S3 method for class 'fitcurve'
plot(x, ...)
```

Arguments

x	is object returned by fitcurve() function
...	Additional graphical parameters given to plot function.

Value

Plot the curves fitted with fitcurve() function

Examples

```
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
x <- fitcurve(da)
plot(x)
```

validate.curve *A Validate.curve function*

Description

Compares the performance of curve fitting techniques fitted in fitcurve() function

Usage

```
validate.curve(x, MethodPath, MethodName)
```

Arguments

x	is object returned by fitcurve() function
MethodPath	as path of a code for user defined error measure technique
MethodName	as name of the user defined error measure technique

Value

A comparison matrix in terms of various error measures.

Examples

```
s <- pcurves$Speed
p <- pcurves$`Nordex N90`
da <- data.frame(s,p)
x <- fitcurve(da)
validate.curve(x)
```

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