Package ‘ImML’

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Title Machine Learning Algorithms Fitting and Validation for Forestry

Description Fitting and validation of machine learning algorithms for volume prediction of trees, currently for conifer trees based on diameter at breast height and height as explanatory variables.

Depends R (>= 4.1.0)

Imports stats (>= 4.1.0), dplyr (>= 1.1.2), rpart (>= 4.1.19), caret (>= 6.0-94), randomForest(>= 4.7-1.1), e1071 (>= 1.7-13), ggplot2 (>= 3.4.2), rlang (>= 1.1.1)

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License GPL-3

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RoxygenNote 7.2.3

NeedsCompilation no

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EastCirclePine — *Volume, height, and diameter of 300 pine trees in East Circle Jammu*

Description

A data frame consisting of diameter (cm), height (m), and volume (m3) for 300 pine trees in East Circle, Jammu, Jammu and Kashmir Forest Department.

Usage

```
EastCirclePine
```

Format

An object of class `data.frame` with 300 rows and 3 columns.

ImML — *Tree volume models based on height and diameter*

Description

Decision tree, random forest, support vector machine, and linear models for fitting tree volume to height and diameter.

Usage

```
ImML(data, plotit = TRUE, setseed = NULL, verbose = FALSE, ...)
```

Arguments

`data`	The data frame to use. Must contain the numeric variables `Volume`, `Height`, and `Diameter`.
`plotit`	If `TRUE`, produces a plot of predicted values vs. observed values.
`setseed`	If not `NULL`, is passed to `set.seed` for the analysis.
`verbose`	If `TRUE`, prints the output of each fitted model object.
`...`	Additional arguments, currently not used.

Details

Calculates mean absolute error, root mean square error, root relative squared error, and prediction error rate for train and test partitions of a data frame using decision tree, random forest, support vector machine, and linear models for fitting tree volume to height and diameter.

Value

A data frame consisting of mean absolute error, root mean square error, root relative squared error, and prediction error rate for train and test partitions using decision tree, random forest, support vector machine, and linear model.

Note

The data frame must contain the numeric variables `Volume`, `Height`, and `Diameter`. `Volume` is used as the dependent variable.

The gray line in the plot is a 1:1 line.

Author(s)

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References

Jeelani, M.I., Tabassum, A., Rather, K and Gul,M.2023. Neural Network Modeling of Height Diameter Relationships for Himalayan Pine through Back Propagation Approach. Journal of The Indian Society of Agricultural Statistics. 76(3): 169–178.

Examples

```
data(EastCirclePine)
ImML(EastCirclePine, plotit=FALSE, setseed=123)
```

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