

Package ‘mnj’

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Title Machine Learning and Judgement

Version 1.0

Description Perform FlexBoost in R. FlexBoost is a newly suggested algorithm based on Adaboost by adjusting adaptive loss functions. Not only FlexBoost but also other machine learning algorithms (e.g. Support Vector Machines) will be added. For more details on FlexBoost see Jeon, Y. S., Yang, D. H., & Lim, D. J. (2019) <[doi:10.1109/access.2019.2938356](https://doi.org/10.1109/access.2019.2938356)>.

Imports rpart(>= 4.1-15)

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flex	<i>FlexBoost</i>
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Description

A Flexible Boosting Algorithm With Adaptive Loss Functions

Usage

```
flex(X, y, n_rounds, interval, width, type, control = rpart.control(cp =
  -1, maxdepth = 1))
```

Arguments

X	Variable of train data
y	Label of train data
n_rounds	How many trees gonna make
interval	Parameter to change Exp Loss-Function
width	Searching area (more than 1)
type	Tie evaluation option (1 or 2, recommed 2)
control	fix cp = -1, maxdepth = 1 based on AdaBoost

Details

This is a main algorithm of FlexBoost: like other Boosting packages, it returns compatible information. In order to prevent unexpected errors, missing data should not be allowed in input data. Return value is composed of four major parts (e.g. terms, trees, alphas, acc). terms : Input variable information trees : Decision tree information alphas : Weight of weak classifier acc : Train accuracy of each iteration

Value

Returns decision tree informations (e.g. Split criteria, Weight of weak classifier, Train accuracy)

Examples

```
data <- read.csv(url("http://bit.ly/flex_iris"), TRUE)
flex(data[,1:2], data[,6], 10, 0.1, 3, 2)
```

mnj.pred

Predict function

Description

A custom predict function for FlexBoost

Usage

```
mnj.pred(object, X, type = c("response", "prob"), n_tree = NULL)
```

Arguments

object	Tree information
X	Variable of train data
type	Class or probability
n_tree	Number of trees

Details

This is a predict function of FlexBoost. FlexBoost consists of two predict functions. One is built-in function in R and the other is this custom predict function for FlexBoost. This custom predict function is needed for the calculation of the final strong classifier. It returns the expected input data's labels.

Examples

```
data <- read.csv(url("http://bit.ly/flex_iris"), TRUE)
model <- flex(data[,1:2], data[,6], 10, 0.1, 3, 2)
mnj.pred(model, data[,1:2], "response", NULL)
```

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