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>.
Imports  rpart(>= 4.1-15)
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flex  FlexBoost

Description  

A Flexible Boosting Algorithm With Adaptive Loss Functions
Usage

```r
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, recommen 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

```r
flex(data[,1:2], data[,6], 10, 0.1, 3, 2)
```

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**mnj.pred**

*Predict function*

Description

A custom predict function for FlexBoost

Usage

```r
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

```r
model <- flex(data[,1:2], data[,6], 10, 0.1, 3, 2)
mjn.pred(model, data[,1:2], "response", NULL)
```
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