

Package ‘MAKL’

January 17, 2022

Title Multiple Approximate Kernel Learning (MAKL)

Version 1.0.0

Description Fits multiple approximate kernel learning (MAKL) models that are scalable, efficient and interpretable.

License GPL (>= 3)

Encoding UTF-8

RoxygenNote 7.1.2

Imports AUC, grplasso

Suggests rmarkdown, knitr

VignetteBuilder knitr

NeedsCompilation no

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makl_test	<i>Function for Binary Classification using a Multiple Approximate Kernel Learning (MAKL) Model</i>
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Description

Function for Binary Classification using a Multiple Approximate Kernel Learning (MAKL) Model

Usage

```
makl_test(X, y, makl_model)
```

Arguments

X	data matrix of size T x d, containing the test instances.
y	response vector of length T, containing only -1 and 1.
makl_model	a list containing the MAKL model returning from makl_train() function.

Details

Classifies the test data, using the MAKL model resulted from makl_train().

Value

a list containing the predictions for test instances and the area under the ROC curve (auroc) values with corresponding number of used kernels for prediction.

makl_train	<i>Function to Train a Multiple Approximate Kernel Learning (MAKL) Model</i>
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Description

Function to Train a Multiple Approximate Kernel Learning (MAKL) Model

Usage

```
makl_train(
  X,
  y,
  D = 100,
  sigma_N = 1000,
  CV = 1,
  lambda_set = c(0.9, 0.8, 0.7, 0.6),
  membership
)
```

Arguments

<i>X</i>	data matrix of size $N \times d$, containing the training instances.
<i>y</i>	response vector of length N , containing only -1 and 1.
<i>D</i>	numeric value related to the number of random features to be used for approximation.
<i>sigma_N</i>	numeric value preferably smaller than N , used to calculate sigma to create random features, it is a subset of the number of rows of <i>X</i> .
<i>CV</i>	integer value between 0 and N . If <i>CV</i> is equal to 0 or 1, no cross validation is performed. If <i>CV</i> is greater than or equal to 2, <i>CV</i> is assigned as fold count in the cross validation.
<i>lambda_set</i>	a continuous number between 0 and 1, used for regularization.
<i>membership</i>	a list of length of number of groups, containing feature memberships to each group.

Details

Trains a MAKL model to be used as an input to *makl_test()* function.

Value

a list containing the MAKL model and related parameters to be used in *makl_test()*.

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