

Package ‘metaSVM’

October 19, 2016

Type Package

Title Meta-analytic Framework Based on Support Vector Machine

Version 1.0

Date 2016-09-28

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Description This package contains functions for metaSVM.

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LazyData TRUE

Imports foreach, MCMCpack, glmnet, penalized, e1071

URL <https://sites.google.com/site/sunghwanshome/>

NeedsCompilation no

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iSVM	<i>Integrated Support Vector Machine</i>
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Description

This function develops an estimation and variable selection algorithm for meta-analytic framework based on the support vector machine (Meta-SVM).

Usage

```
iSVM(sm, is.constant=TRUE)
```

Arguments

sm	A list generated from SETUP
is.constant	if TRUE, an intercept is included in the model; default is TRUE.

Details

The proposed Meta-SVM is motivated by the recent meta-analytic method exploiting the logistic regression. We develop a novel implementation strategy in spirit of Newton's method in the Meta-SVM. For the most part, the objective function of SVM is formed with the hinge loss and a range of penalty terms (e.g., L1-lasso, group lasso and etcs). We particularly adopts the sparse group lasso enabling to capture both common and study specific genetic signals among all studies.

Value

A list contains information on the final model

Author(s)

SungHwan Kim, JungJun Lee, Jae-Hwan Jhong, Ja-Yong Koo

See Also

[SETUP](#)

Examples

```
library(metaSVM)
fpath = system.file("extdata", "DList_lung_svm.Rdata", package="metaSVM")
DList = get(load(fpath))
Y = list()
for (k in 1:length(DList))
{
  tmp = as.numeric(rownames(DList[[k]]) == "1")
  tmp[tmp == 0] = -1
  Y[[k]] = tmp
}
for(i in 1:length(DList))
  rownames(DList[[i]]) = 1:dim(DList[[i]])[1]
sm = SETUP(X = DList, Y = Y, lambda1 = 0.1, lambda2 = 0.1)
Res = iSVM(sm, is.constant = TRUE)
```

SETUP

Setup a basic list

Description

This function generates a basic list from data sets to perform meta-SVM.

Usage

```
SETUP(X, Y, lambda1, lambda2)
```

Arguments

X	The predictor variable
Y	The response variable
lambda1	A tuning parameter controls the first penalty term (group lasso)
lambda2	A tuning parameter controls the second penalty term (L1-lasso)

Value

sm A list contains a basic information about model.

Author(s)

SungHwan Kim, JungJun Lee, Jae-Hwan Jhong, Ja-Yong Koo

See Also

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