coxphSGD

October 31, 2015

`coxphSGD` *Stochastic Gradient Descent log-likelihood estimation in Cox proportional hazards model*

Description

Function `coxphSGD` estimates coefficients using stochastic gradient descent algorithm in Cox proportional hazards model.

Usage

```
coxphSGD(formula, data, reorderObs = TRUE, learningRates = function(x) 1/x, beta_0 = 0,
    epsilon = 1e-05, batchSize = 10, epoch = 20)
```

Arguments

`formula`	a formula object, with the response on the left of a ~ operator, and the terms on the right. The response must be a survival object as returned by the Surv function.
`data`	a data.frame in which to interpret the variables named in the `formula`.
`reorderObs`	a logical value telling whether reorder observations at each epoch. when order of observations in estimation should be randomly generated.
`learningRates`	a function specifing how to define learning rates in steps of the algorithm. By default the `f(t)=1/t` is used, where `t` is the number of algorithm's step.
`beta_0`	a numeric vector (if of length 1 then will be replicated) of length equal to the number of variables after using `formula` in the `model.matrix` function
`epsilon`	a numeric value with the stop condition of the estimation algorithm.
`batchSize`	a numeric value specifing the size of a batch set to take from the reordered dataset to update the coefficients in one step of an algorithm.
`epoch`	a numeric value declaring the number of epoches to run for the estimation algorithm in the stochastic gradient descent.

Note

If one of the conditions is fullfiled

- $||\beta_{j+1} - \beta_j|| <$ `epsilon` parameter for any j
- $\#epochs >$ `epochs` parameter

the estimation process is stopped.

Examples

```
library(survival)
## Not run:
coxphSGD(Surv(time, status) ~ ph.ecog + age, data = lung)

## End(Not run)
```