

Package ‘fastAFT’

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Title Fast Regression for the Accelerated Failure Time (AFT) Model

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Depends R (>= 2.8.0)

Suggests knitr, rmarkdown, survival

VignetteBuilder knitr

Description Fast censored linear regression for the accelerated failure time (AFT) model of Huang (2013) <[doi:10.1111/sjos.12031](https://doi.org/10.1111/sjos.12031)>.

License GPL (>= 2)

NeedsCompilation yes

Repository CRAN

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faft	<i>Fast censored linear regression for the accelerated failure time (AFT) model</i>
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Description

An implementation of the fast censored linear regression in Huang (2013).

Usage

```
faft(x,dlt,z,weight="logrank",ynci=0,epl=0.95,epu=0.05)
```

Arguments

x	follow-up time.
dlt	censoring indicator: 1 - event, 0 - censored.
z	matrix of covariates: each column corresponds to a covariate.
weight	either "logrank" or "Gehan" estimating function.
ynci	compute test inversion-based 95% CI's? 1 - yes, 0 - no.
ep1	parameter in (0,1) for determining the lower quantile from censored quantile regression (Huang 2010) for the preparatory estimation: sum of squared covariates for at-risk uncensored individuals is about $\$ep1^{(\dim(z)[2]+1)}\$$ in determinant.
epu	parameter in (0,1) for determining the upper quantile from censored quantile regression (Huang 2010) for the preparatory estimation: sum of squared covariates for at-risk uncensored individuals is about $\$epu^{(\dim(z)[2]+1)}\$$ in determinant.

Value

weight	either "logrank" or "Gehan" estimating function.
beta	estimated regression coefficient (the proposed).
va	sandwich variance estimate for beta.
qif	quadratic score statistic at beta.
ci95	test inversion-based 95% CI's, only available if requested and successful.
message	point estimation: "success", "error - algorithm fails", or "warning - singular hessian".
imsg	numerical code for point and test inversion-based interval estimation: 0 - success in point and interval, 1 - error in point where algorithm fails, 2 - warning in point with singular hessian, 3 - success in point but failure in interval.
beta1stp	the one-step estimator.
qif1stp	quadratic score statistic at beta1stp.
betainit	the initial estimator.
qifinit	quadratic score statistic at betainit.

Author(s)

Yijian Huang

References

- Huang, Y. (2010) Quantile calculus and censored regression, *The Annals of Statistics* 38, 1607–1637.
- Huang, Y. (2013) Fast censored linear regression. *Scandinavian Journal of Statistics* 40, 789–806.

Examples

```
## simulate a dataset of size 100 with 2 covariates
size <- 100
npred <- 2
beta <- rep(1,npred)

cvt <- matrix(rnorm(size*npred),ncol=npred)
resid <- log(rexp(size))
event.t <- resid + cvt %*% beta
censr.t <- log(runif(size, 0, 6))
x <- pmin(event.t, censr.t)
dlt <- as.numeric(event.t<=censr.t)

## run censored linear regression
fit.g <- faft(x,dlt,cvt,weight="Gehan")
fit.l <- faft(x,dlt,cvt,weight="logrank")
```

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