Package 'sparseLTSEigen'

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Type Package

Title RcppEigen back end for sparse least trimmed squares regression

Version 0.2.0.1

Date 2013-11-13

Depends robustHD (>= 0.4.0)

Imports Rcpp (>= 0.9.10), RcppEigen (>= 0.2.0)

Suggests mvtnorm

LinkingTo Rcpp, RcppEigen

Description Use RcppEigen to fit least trimmed squares regression models with an L1 penalty in order to obtain sparse models.

License GPL (>= 2)

LazyLoad yes

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NeedsCompilation yes

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Description

Use RcppEigen to fit least trimmed squares regression models with an L1 penalty in order to obtain sparse models.

Details

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Date:	2013-11-13
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Suggests:	mvtnorm
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LazyLoad:	yes

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Note

Package **sparseLTSEigen** provides an alternative back end for sparse least trimmed squares regression from package **robustHD**. The back end built into **robustHD** uses the C++ library Armadillo, whereas this back end uses the C++ library Eigen. The latter is faster, but currently does not work on 32-bit R for Windows.

When **sparseLTSEigen** is loaded, its back end is used automatically for sparse least trimmed squares regression, except on 32-bit R for Windows.

Author(s)

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Examples

```
# example is not high-dimensional to keep computation time low
library("mvtnorm")
set.seed(1234)  # for reproducibility
n <- 100  # number of observations
p <- 25   # number of variables
beta <- rep.int(c(1, 0), c(5, p-5))  # coefficients
sigma <- 0.5      # controls signal-to-noise ratio
epsilon <- 0.1    # contamination level
Sigma <- 0.5^t(sapply(1:p, function(i, j) abs(i-j), 1:p))
x <- rmvnorm(n, sigma=Sigma)    # predictor matrix
e <- rnorm(n)                   # error terms
i <- 1:ceiling(epsilon*n)       # observations to be contaminated
e[i] <- e[i] + 5                # vertical outliers
y <- c(x %*% beta + sigma * e)  # response
x[i,] <- x[i,] + 5              # bad leverage points

## fit sparse LTS model
# since package sparseLTSEigen is loaded, its back end based on
# the C++ library Eigen is used rather than the back end built
# into package robustHD, except on 32-bit R for Windows
fit <- sparseLTS(x, y, lambda = 0.05, mode = "fraction")
coef(fit, zeros = FALSE)
```

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