

Package ‘evar’

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Type Package

Title Estimating and Testing for (Hight-dimensional) Expectile Regression Models

Version 1.0.1

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Description Estimating the Coefficients for Expectile Regression Models and Testing Coefficients as a Whole for High-dimensional Expectile Regression Models

License GPL (>= 2)

Depends R (>= 3.2.0)

LazyData true

NeedsCompilation yes

Repository CRAN

URL <https://github.com/xliusufe/evar>

Encoding UTF-8

Archs i386, x64

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evar-package	<i>Estimating and Testing for (Hight-dimensional) Expectile Regression Models</i>
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Description

Estimating the Coefficients for Expectile Regression Models and Testing Coefficients as a Whole for High-dimensional Expectile Regression Models

Details

Package: evar
 Type: Package
 Version: 1.0.1
 Date: 2020-09-7
 License: GPL (≥ 2)

References

Tan, X. and Liu, X. (2020). Testing value at risk in ultra-high dimensional expectile models. Manuscript.

evar.est

Estimating the coefficients for the expectile regression models

Description

Estimating the coefficients for the expectile regression models

Usage

```
evar.est(y,x=NULL,tau=0.5,eps=1e-6,max_step=100)
```

Arguments

y	Response vector in R^n .
x	Numeric design matrix for the model in $R^{n \times p}$.
tau	The τ^{th} expectile, a scalar with the value in $(0, 1)$. Default is $\tau = 0.5$.
eps	Convergence threshold. The algorithm iterates until the relative change in any coefficient is less than eps. Default is $\text{eps} = 1\text{e-}6$.
max_step	Maximum number of iterations. Default is $\text{max_step} = 100$.

Value

beta	Estimator of the coefficients.
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References

Tan, X. and Liu, X. (2020). Testing value at risk in ultra-high dimensional expectile models. Manuscript.

Examples

```

tau <- 0.4
n   <- 150
p   <- 5

beta <- c(1, 2, -1, -2, 3)
set.seed(2)
x <- matrix(rnorm(n*p),n,p)
y <- x%%beta + rnorm(n)

fit <- evar.est(y, x, tau)

```

evar.test	<i>Testing the coefficients for the high-dimensional expectile regression models</i>
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Description

Testing the coefficients as a whole for the high-dimensional expectile regression models

Usage

```
evar.test(y,x=NULL,tau=0.5,q=0,eps=1e-6,max_step=100)
```

Arguments

y	Response vector in R^n .
x	Numeric design matrix for the model in $R^{n \times p}$.
tau	The τ^{th} expectile, a scalar with the value in $(0, 1)$. Default is tau = 0.5.
q	A nonnegative integer indicating that the first q covariates are not tested. Default is q=0.
eps	Convergence threshold. The algorithm iterates until the relative change in any coefficient is less than eps. Default is eps = 1e-6.
max_step	Maximum number of iterations. Default is max_step = 100.

Value

Tn	Value of test statistic.
beta	Estimator of the coefficients corresponding to the first q covariates.
pval	P-value.

References

Tan, X. and Liu, X. (2020). Testing value at risk in ultra-high dimensional expectile models. Manuscript.

Examples

```
tau <- 0.4
n   <- 150
p   <- 450
q   <- 3

set.seed(2)
x <- matrix(rnorm(n*p),n,p)
y <- rnorm(n)

fit <- evar.test(y, x, tau, q)
```

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