Package 'MDOLS'

Type Package

Title Inference of Quadratic Functional for Moderate-Dimensional OLS

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Description Statistical inference for quadratic functional of the moderate-
dimensional linear model in Guo and Cheng (2021) <DOI:10.1080/01621459.2021.1893177>.

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NeedsCompilation no

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MD_OLS   *R Package for Quadratic Functional of Moderate-Dimensional OLS*

Description

This package conduct statistical inference for quadratic functional of the moderate-dimensional linear model in Guo and Cheng (2020).

Usage

```
MD_OLS(type_inference, level_significance, null_value, X, Y, V, W)
```

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Arguments

type_inference   the type of inference: 0-confidence interval for quadratic functional; 1-signal de-
                 tection; 2-FVE; 3-error variance; 4-equality of two parameters; 5-co-heritability;
                 6-confidence ball; 7-inference for quadratic functional

level_significance
                 nominal significance level, default value is 0.05

null_value   the null value for hypothesis testing

X   n by p matrix of predictor for model 1

Y   n by 1 vector of response for model 1

V   n by p matrix of predictor for model 2

W   n by 1 vector of response for model 2

Details

"type_inference", "X" and "Y" are required inputs.

Value

eta_hat_proposed
                 proposed estimator for eta

rho_hat_proposed
                 proposed estimator for rho

var_proposed_test
                 proposed estimator for the variance part

var_convnetional_test
                 conventional estimator for the variance part

CI_proposed_method_lower
                 lower bound of the confidence interval

CI_proposed_method_upper
                 upper bound of the confidence interval

test_stat_proposed
                 proposed test statistic

test_stat_conventional
                 conventional test statistic

p_value_proposed
                 p-value of the proposed test

p_value_conventional
                 p-value of the conventional test

norm_beta_estimated
                 estimated norm of beta

norm_gamma_estimated
                 estimated norm of gamma

co_herit_hat_proposed
                 proposed estimate of co-heritability

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co_herit_hat_conventional
                 conventional estimate of co-heritability
sigma_star_hat_square
                 sigma star hat square
ID_correctly_covered_by_confidence_ball_two_sided
                 indicator that the parameter is covered by the two-sided confidence ball
ID_correctly_covered_by_confidence_ball_one_sided
                 indicator that the parameter is covered by the one-sided confidence ball
```

Note

NA

Author(s)

Xiao Guo and Guang Cheng

References

Moderate-Dimensional Inferences on Quadratic Functionals in Ordinary Least Squares

See Also

NA

Examples

```
type<-4
level<-0.05
null_value<-0
n_1 <- 500
p <-100
n_2 <- 600
X<-matrix(rnorm(n_1*p),nrow=n_1,ncol=p)
eps<-matrix(rnorm(n_1),nrow=n_1,ncol=1)
Y <- X[,1] + eps
V<-matrix(rnorm(n_2*p),nrow=n_2,ncol=p)
delta<-matrix(rnorm(n_2),nrow=n_2,ncol=1)
W<-V[,1] + delta
MD_OLS(type, level, null_value, X, Y,V,W)
```

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