

Package ‘MDOLS’

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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](https://doi.org/10.1080/01621459.2021.1893177)>.

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MD_OLS	<i>R Package for Quadratic Functional of Moderate-Dimensional OLS</i>
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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)
```

Arguments

type_inference	the type of inference: 0-confidence interval for quadratic functional; 1-signal detection; 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

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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