Regression

Intro

Regression refers technique to try to find relationship between random variable and .

Model

Linear Regression

Estimation approach

Least Square 最小平方法

Estimation

where

: the estimation of

: the estimation of

: the estimation of

SSE

=

Differentiate to .

=

=

To evaluate the critical value of and

Let = 0

= = 0

=> = 0

Then

=

=

SST

=

Taking summation at both side, getting

=

By definition of , it can be rewriten as follows

Coefficient of determination

=

=

=

=

Correlation of sample

=

=

F test

=

=

t test

=

Note

=

MLE最大概率法

Alpha test

Hypothesis

|  |  |  |  |
| --- | --- | --- | --- |
| Estimated value | comp | Critical | area |
|  |  |  | Accept area |
|  |  |  | Reject area |

Ref

[Regression analysis - Wikipedia](https://en.wikipedia.org/wiki/Regression_analysis)