1. What is Linear regression
2. Equation of Linear regression
3. Simple and Multiple linear regression
4. Finding coefficients
5. Error – SSE- MSE – RMSE
6. Loss- cost
7. OLS method
8. Interpretation
9. RSE
10. R-square
11. Underfit-normal fit-overfit
12. Bias-variance trade off
13. Low bias-high variance ===== > Overfit

If we increase model complexity , R-square will be increase

If we use all the variables then R-square will be one ====== model overfit

1. Adjusted R-square:

R-square value max=1 (100%) min=0

Adjusted R square max= R-square min=0

Y= bo +b1\*x1

R-square=70% Adjusted R-square=70% No problem

Y= bo +b1\*x1+b2\*x2

R-square = 75% Adjusted R-quare = 75% No problem

Y=bo+b1\*x1+b2\*x2+b3\*x3

R-quare = 80 Adjusted R-quare= 79% Problem

Case-1: P=0

P= number of variables

Case-2: P= max lets 100

RSE R-square Adjusted R-square

Q) What is RSE

Q) What is the definition of R-square

Q) What is the formulae

Q) What is the draw back of R-square

Q) Overfit concepts

Q) Adjusted R-square

1. We can select important features

Hypothesis in Linear regression

Coeff p

| Intercept | 100 |  |  | Alpha=0.05 |  |
| --- | --- | --- | --- | --- | --- |
| TV | 0.3 |  | 0.001 | P<alpha (keep) | Relation is there |
| SM | 0.2 |  | 0.1 | p>alpha (don’t keep) | No relatpn |
| NP | 0.1 |  | 0.3 | p>alpha (don’t keep) | No relation |
|  |  |  |  |  |  |

================== Variables ===================================

=================== Errors =====================================