Linear Regression

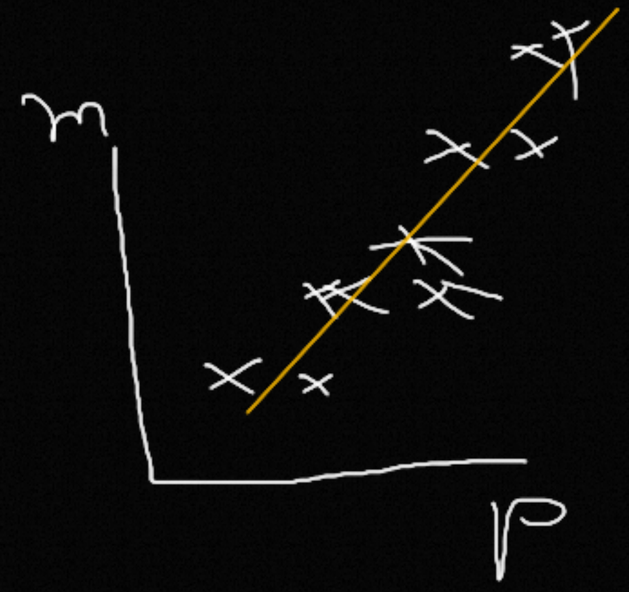
- Linear relationship b/w o/p & predictor
- predict Cont. value

1) simple LR
2) multi LR

1) simple – 1 predictal

2) multi – more than 1

mileage → price



$y = mx + c$

↑ output

↳ input

price = mileage x m + c

$y = mx + c + noise$

m is slope

c is intercept

$\hat{y} \rightarrow$ predicted

$y \rightarrow$ Actual

$\hat{y} = mx + c$

Find m & c

$\hat{y} = mx + c$

$y = mx + c + noise$

$y - \hat{y}$

$\sum_{i=1}^{n} |y - \hat{y}|$ $\quad y - \hat{y}$ +ve

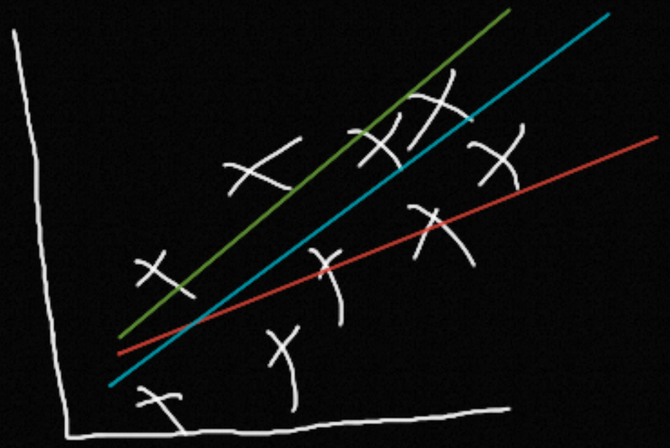
-ve

$$\text{Cost function} = \sum_{i=1}^{n} |y - \hat{y}|^2$$ → total loss

$$\hat{y} = mx + c$$

$$\sum_{i=1}^{n} |\hat{y} - y|^2 \rightarrow \sum_{i=1}^{n} (y - mx - c)^2$$

$$\min_{m,c} J(m, c) = \sum_{i=1}^{n} (y - mx - c)^2$$



$J(m, c)$

$m \rightarrow inf$

$c \rightarrow inf$

m, c