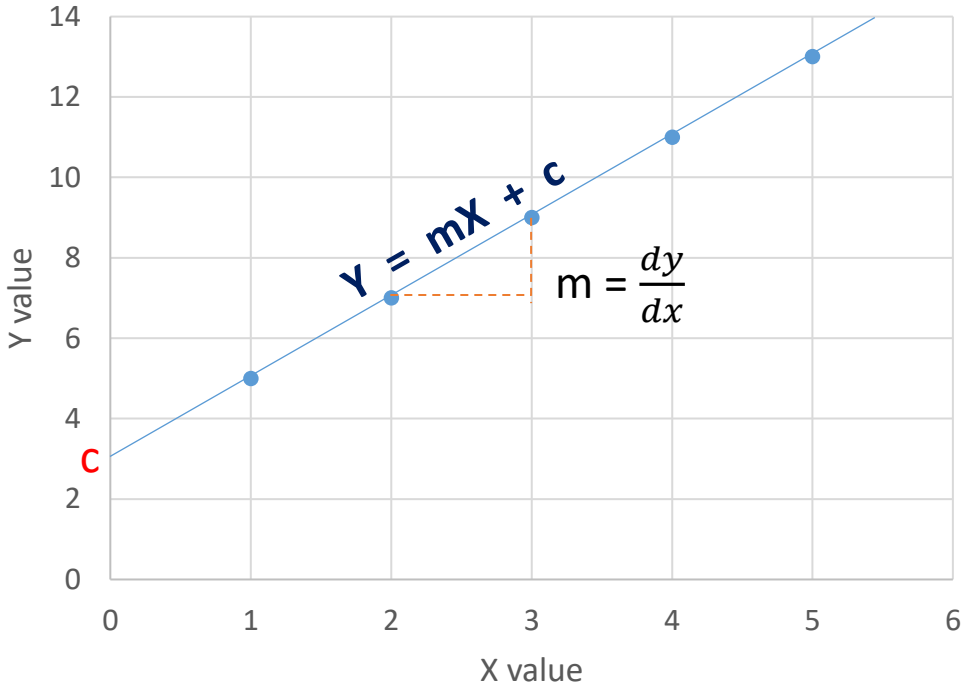
Siddhardhan

Linear Regression - Mathematical Understanding

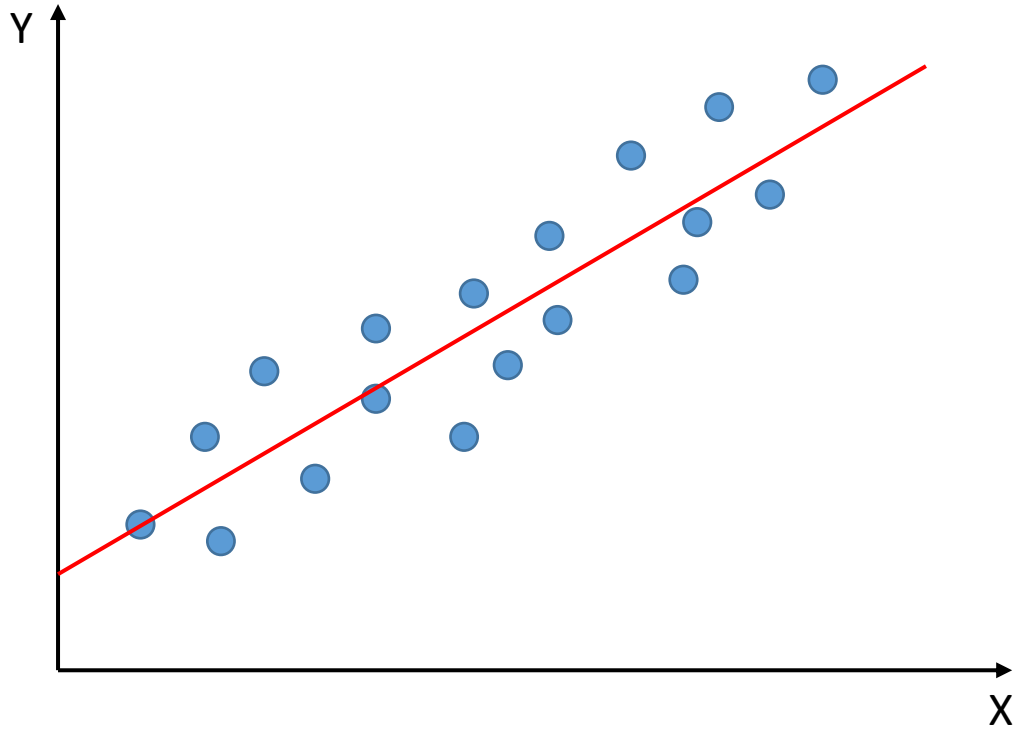
Linear Regression



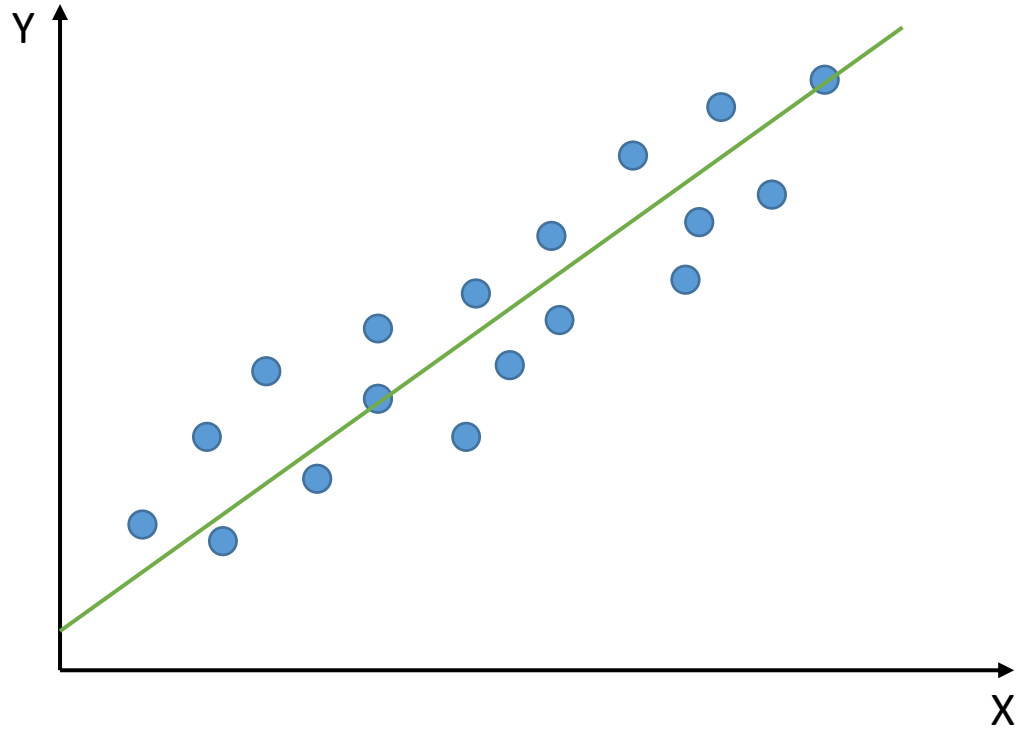
Y = mX + c

X --> X value
Y --> Y value
m --> Slope
c --> Intercept

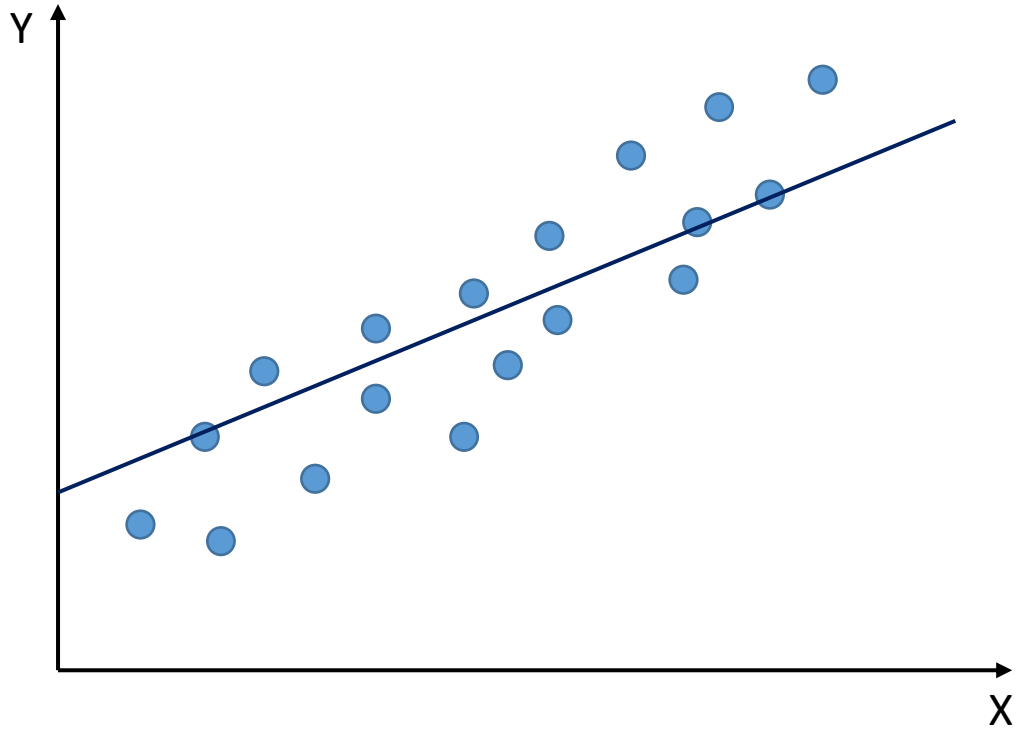
Linear Regression



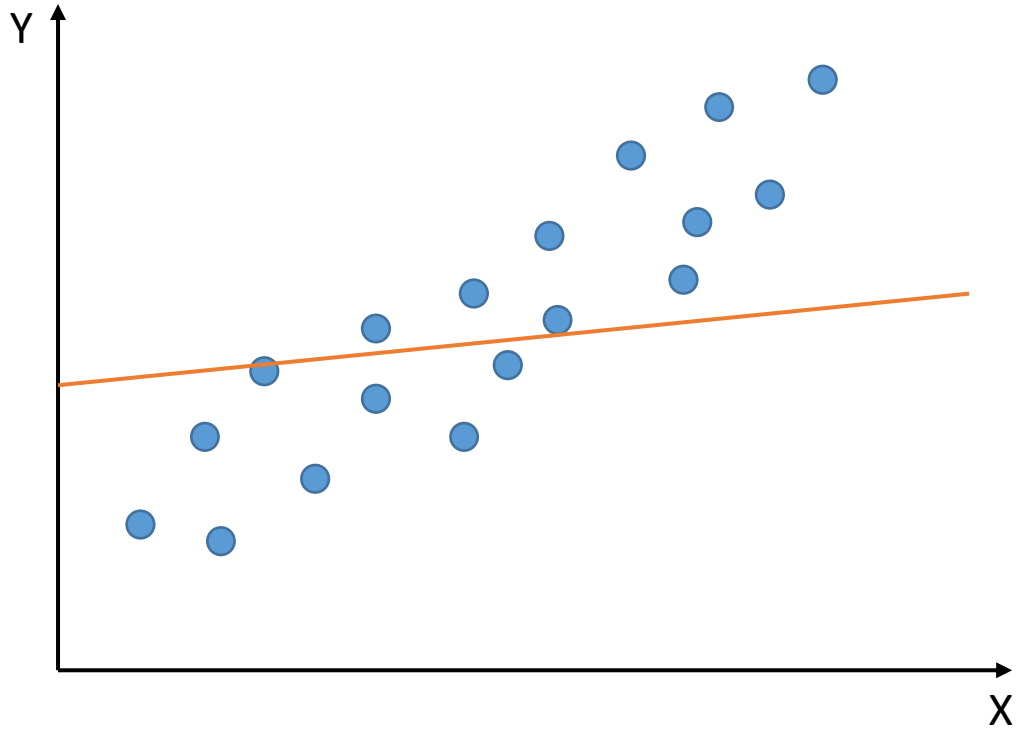
Linear Regression



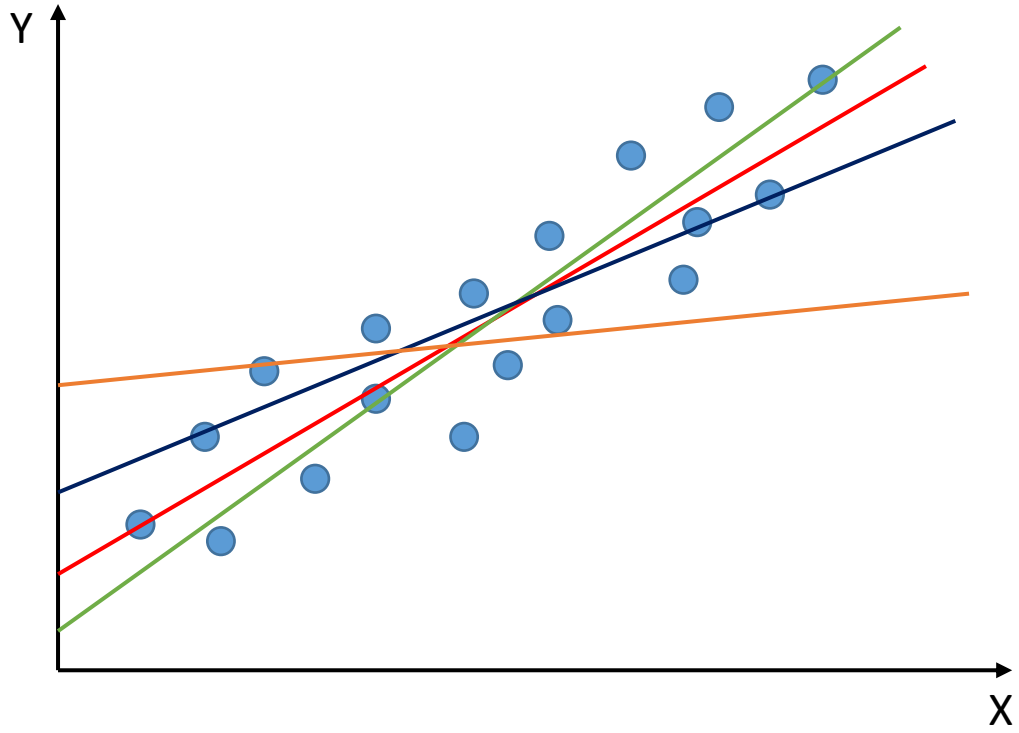
Linear Regression



Linear Regression



Linear Regression



Loss Function

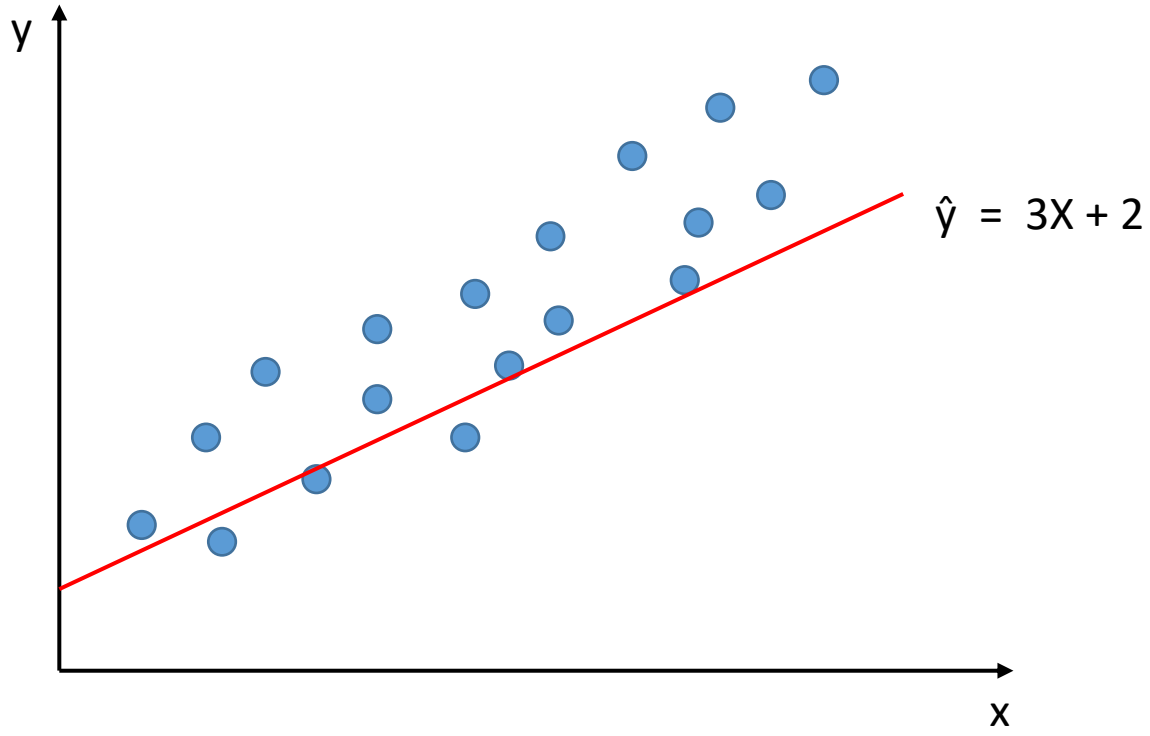
Loss function measures how far an estimated value is from its true value.

It is helpful to determine which model performs better & which parameters are better.

$$\textbf{\textit{Loss}} \;=\; \frac{1}{n}\sum_{i=1}^{n}(Y_i - \hat{Y}_i)^2$$

Loss Function

Randomly assigned Parameters: m = 3; c = 2



x	y	ŷ
2	10	8
3	14	11
4	18	14
5	22	17
6	26	20

Loss Function

x	y	ŷ
2	10	8
3	14	11
4	18	14
5	22	17
6	26	20

$$\textbf{Loss} = \frac{1}{n}\sum_{i=1}^{n}(Y_i - \hat{Y}_i)^2$$

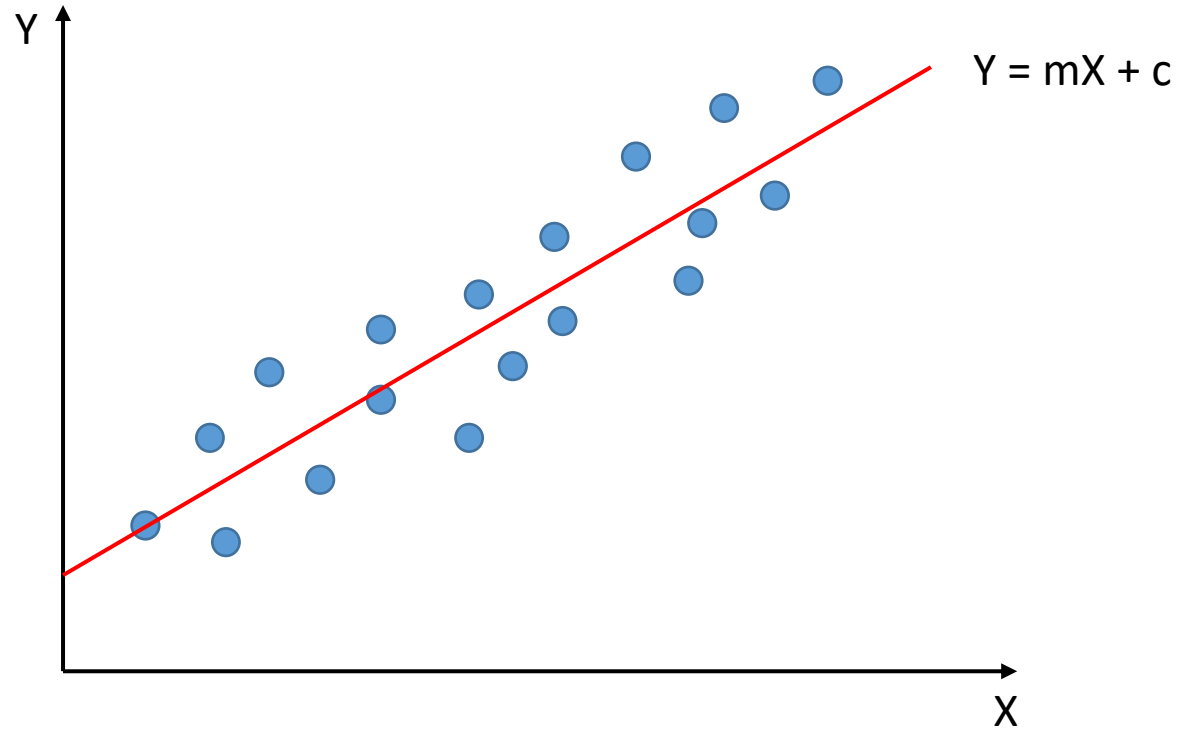
Loss = [$(10 - 8)^2 + (14 - 11)^2 + (18 - 14)^2 + (22 - 17)^2 + (26 - 20)^2$] / 5

Loss = [4 + 9 + 16 + 25 + 36] / 5

Loss = 18

Low Loss value → High Accuracy

Linear Regression



Best Fit