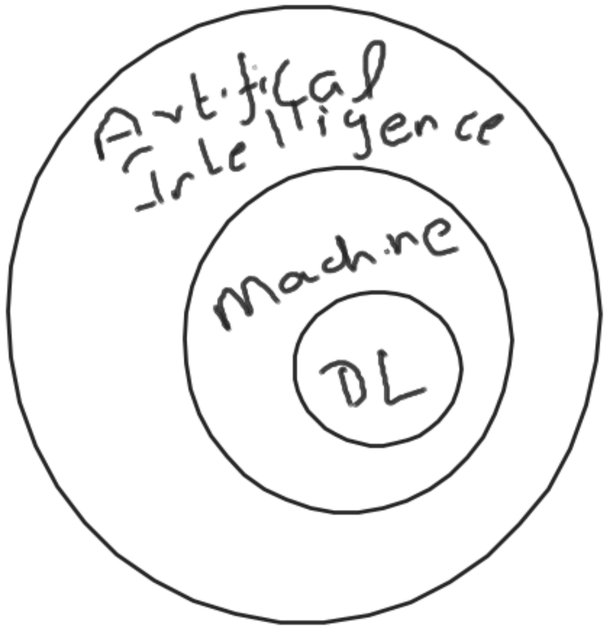
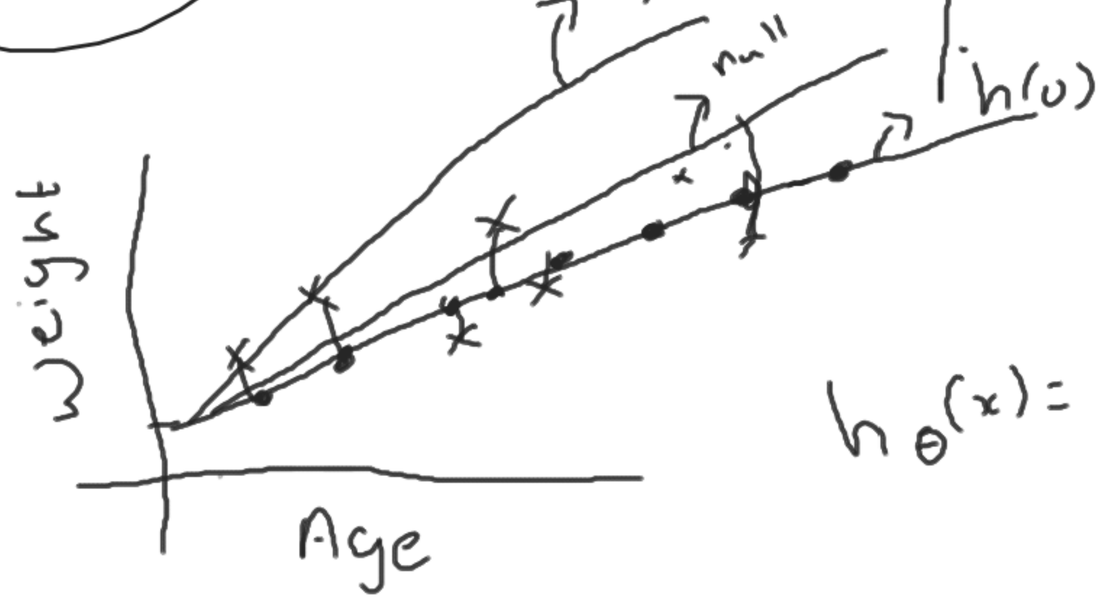


→ Independent

Age	Weight → Dependent
24	72
23	71
25	72.5



$h_\theta(x) = \theta_0 + \theta_1 x$

predict... Coefficient

$\hat{y} = m x + C$ → Intercept

x → Input

predicted input

Intercept

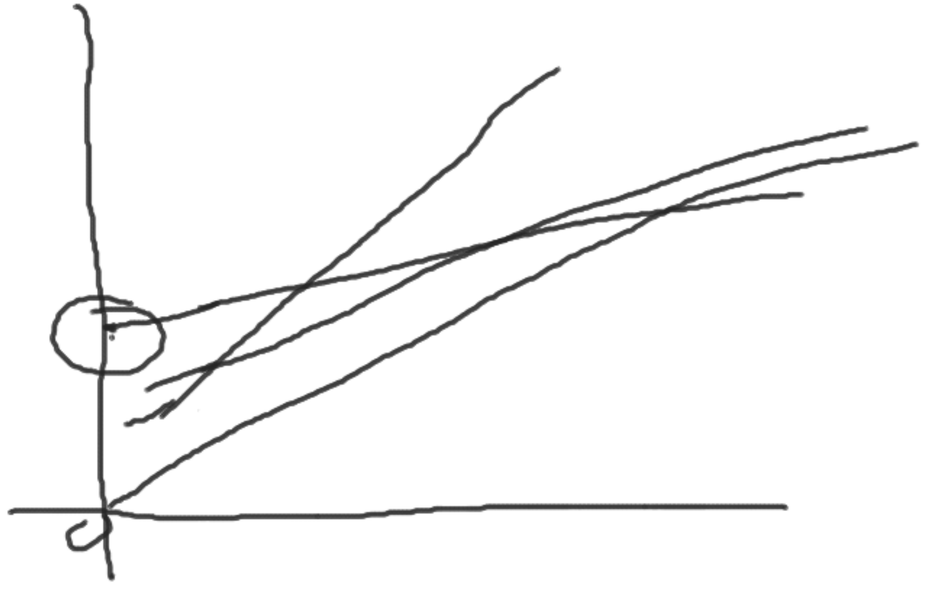
$\hat{y} = \beta_0 + \beta_1 x$ → Input

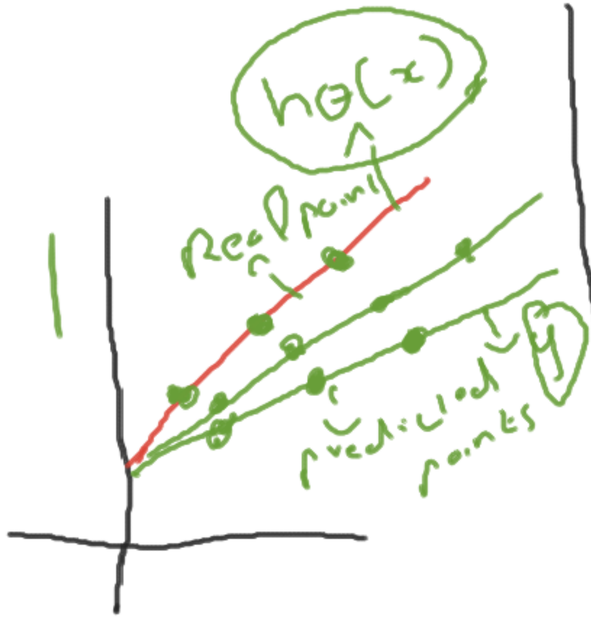
↓

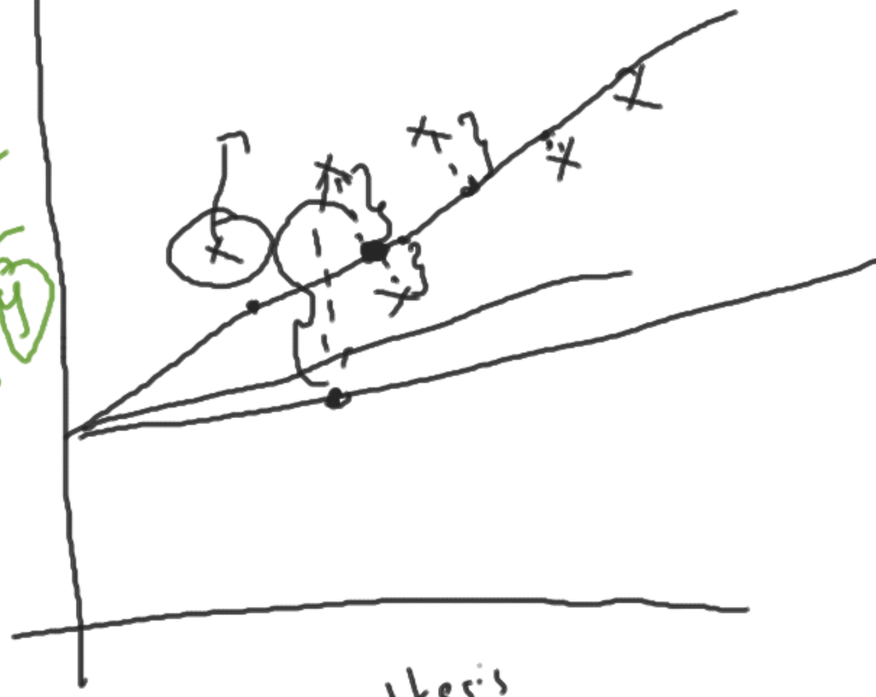
Coefficient

$h_\theta(x) = \theta_0 + \theta_1 x$

Predict — slope — Intercept coefficient — Input

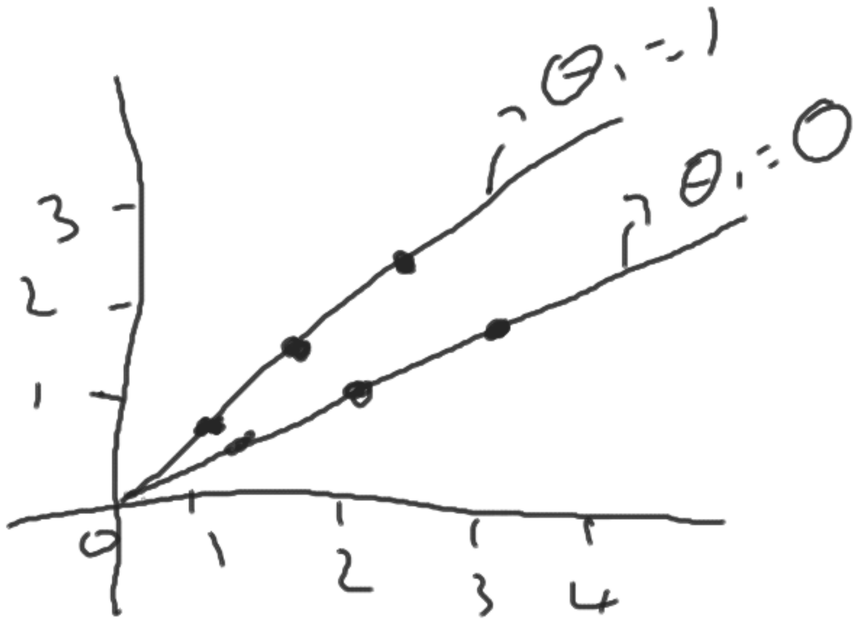






Null hypothesis

$$\frac{1}{2m} \sum_{i=1}^{m \to m} \left(h_\theta(x)^{(i)} - y^{(i)} \right)^2$$



$\theta_0 = 0$ $\theta_1 = 1$ $= \theta_1 x$

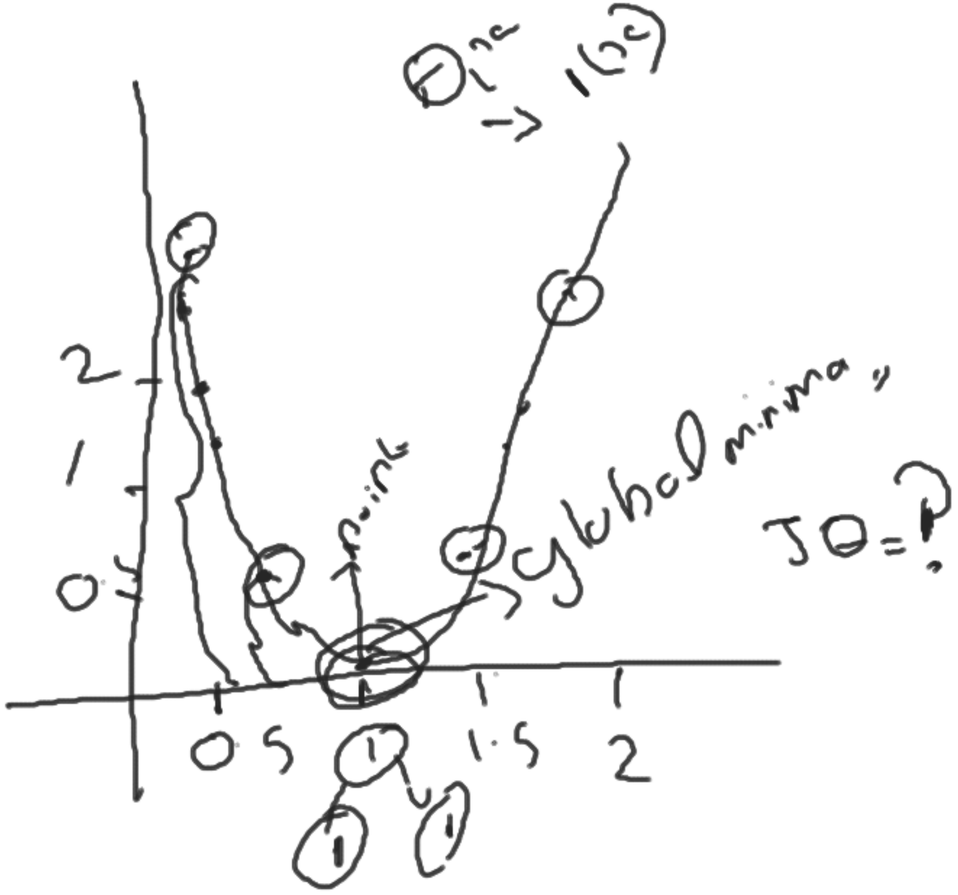
$(1,1),(2,2)(3,3)$

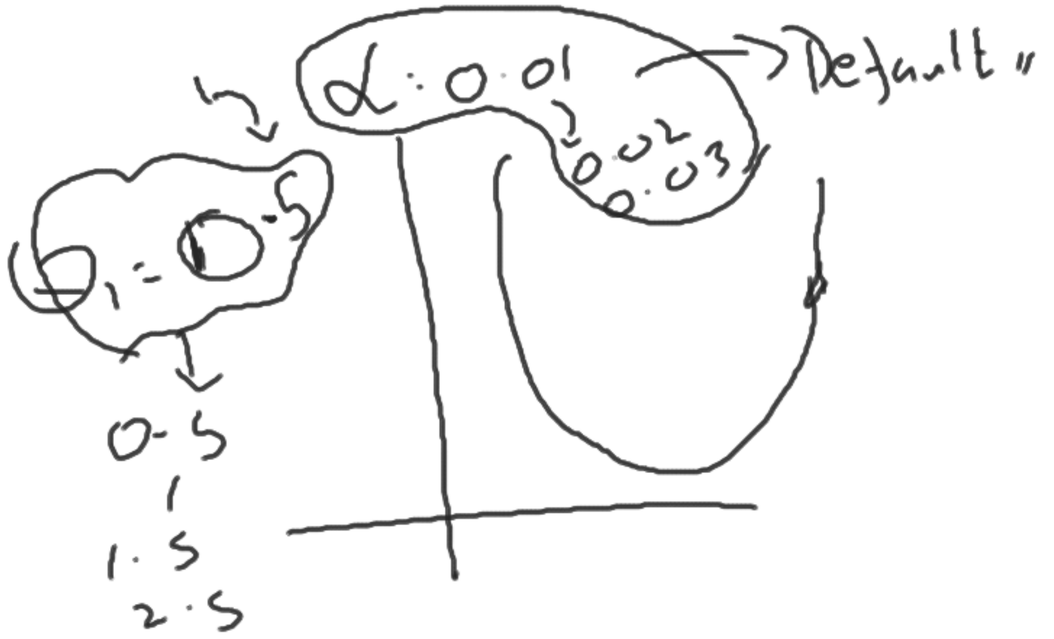
$h_\theta(x) = \vec{\theta_0} + \vec{\theta_1} x$

$$\frac{1}{2m} \sum_{i=1}^{3} (h_\theta x^{(i)} - y^{(i)})^2$$

$$\frac{1}{2m}\left[(1-1)^2 + (2-2)^2 + (3-3)^2\right]$$ 0 error value..

$$= \frac{1}{2m}[\vec{0}] \Rightarrow \theta_1$$





$$J(\theta_1) = \frac{1}{2\times 3}\left[(0.5-1)^2+(0.5-2)^2\right]$$

$J(\theta_1) = 0$

≈ 0.58 → error

$$J(\theta_1) = \frac{1}{2m}\sum_{i=1}^{3}\left(h_\theta(x)^{(i)} - y^{(i)}\right)^2$$

$= ($

Convergence

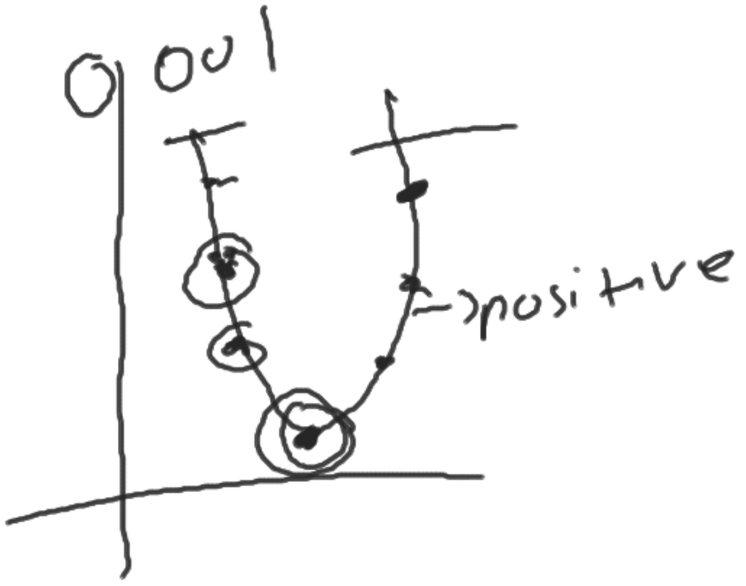
Repeat Until Convergence

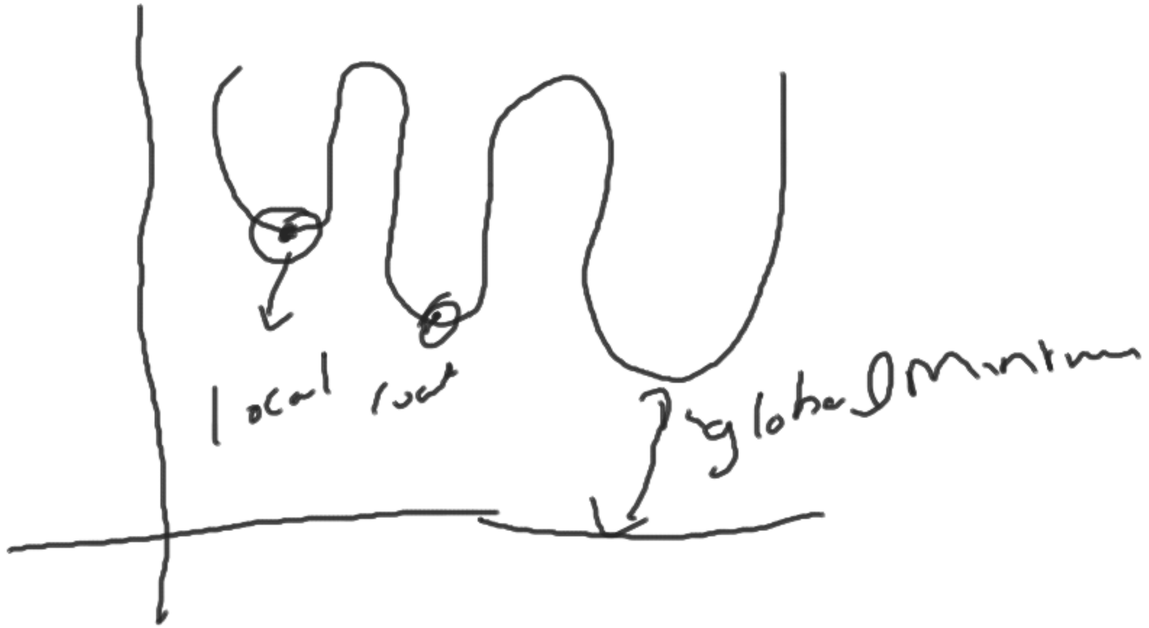
$$\theta_j - \alpha \frac{\partial}{\partial \theta} J(\theta_0, \theta_1)$$

$$J\theta_0: \theta_0 - \alpha \frac{1}{m} \sum_{i=1}^{m} (h_\theta(x^{(i)}) - y^{(i)})$$

learning rate → predicted value

next pr
predicted value //




local root
global Minimum

0.5

r^2..

$$R_2 = 1 - \left(\frac{\text{Sum of Squared errors}}{\text{Sum of total squared errors}} \right) \Rightarrow \frac{\sum (y_i - \hat{y}_i)^2}{\sum (y_i - \bar{y})^2}$$

$h_\theta(x)$

low

high

Actual point

Actual..

0.62

$= 0.62 \rightarrow 62\%$

$0.72 \rightarrow 72\%$

$0.92 \rightarrow 92\%$

100%

91 96 97 92%