LECTURE 2

LINEAR REGRESSION

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http://hunkim.github.io/ml

Acknowledgement

01. Andrew Ng's ML Class
    - https://class.coursera.org/ml-003/lecture
    - http://www.holehouse.org/mlclass(note)

02. Convolutional Neural Networks for Visual Recognition
    - http://cs231n.github.io

03. TensorFlow
    - https://www.tensorflow.org
    - https://github.com/aymericdamien/TensorFlow-Examples

Predicting Exam Score : Regression

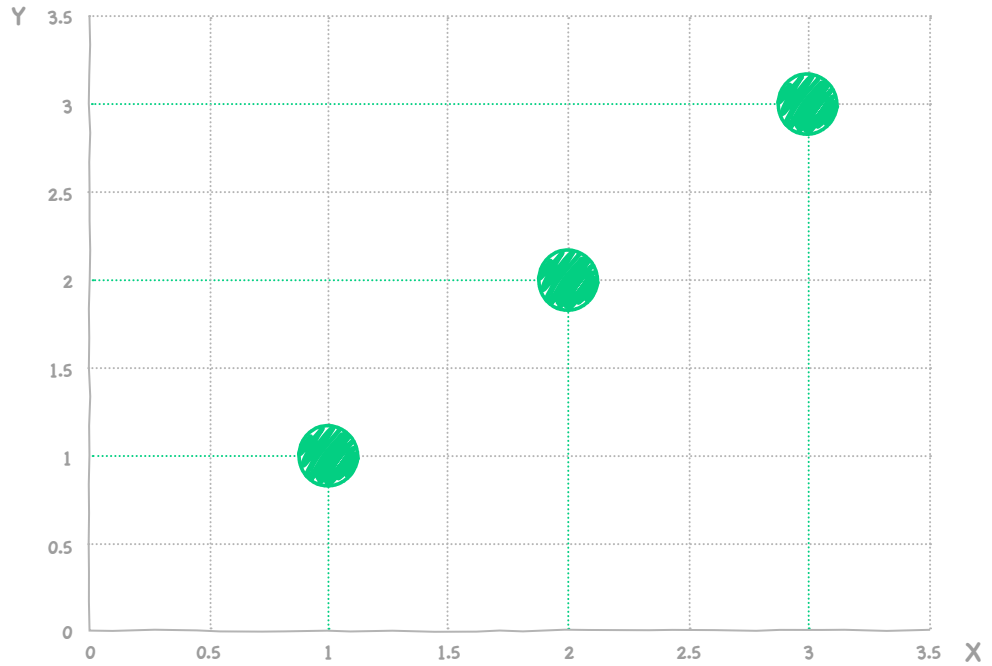
X (hours)	Y (score)
10	90
9	80
3	50
2	30

Regression(Data)

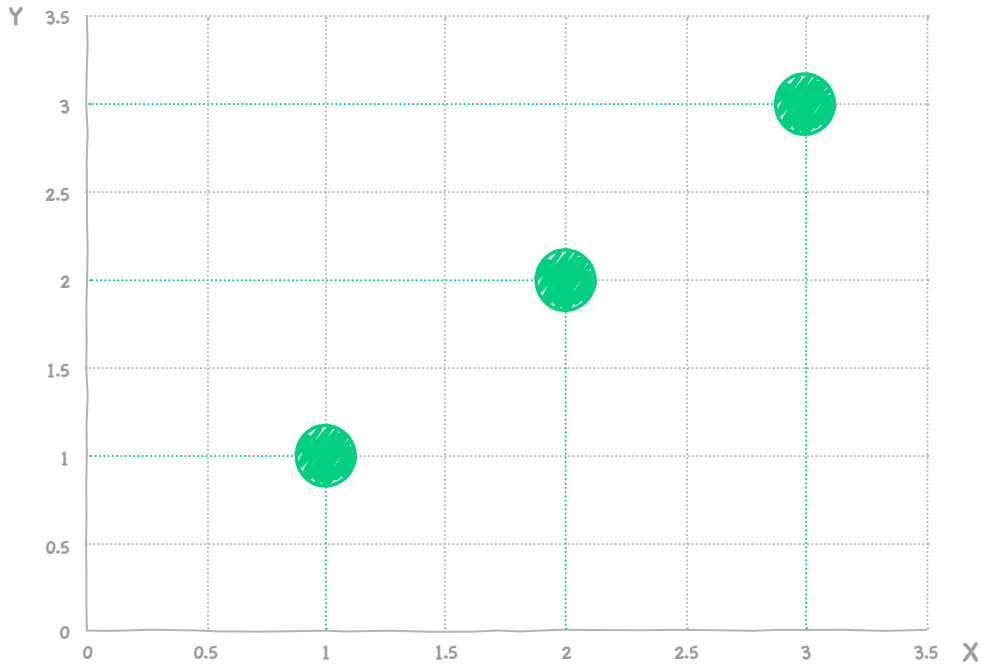
X	Y
1	1
2	2
3	3

Regression (Presentation)

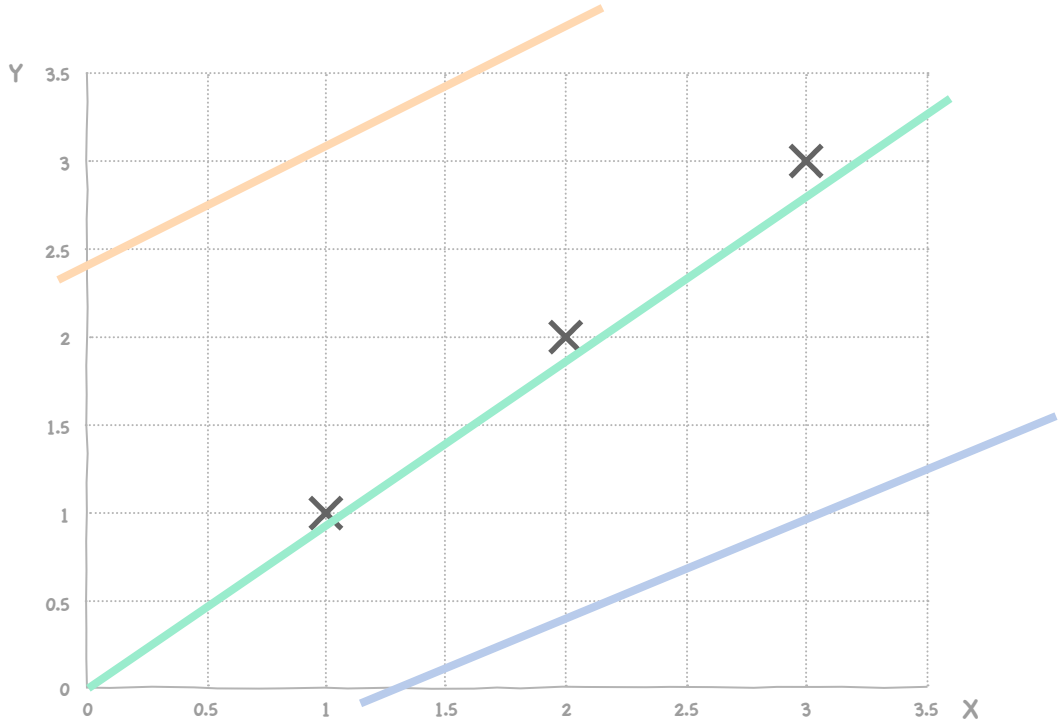
X	Y
1	1
2	2
3	3



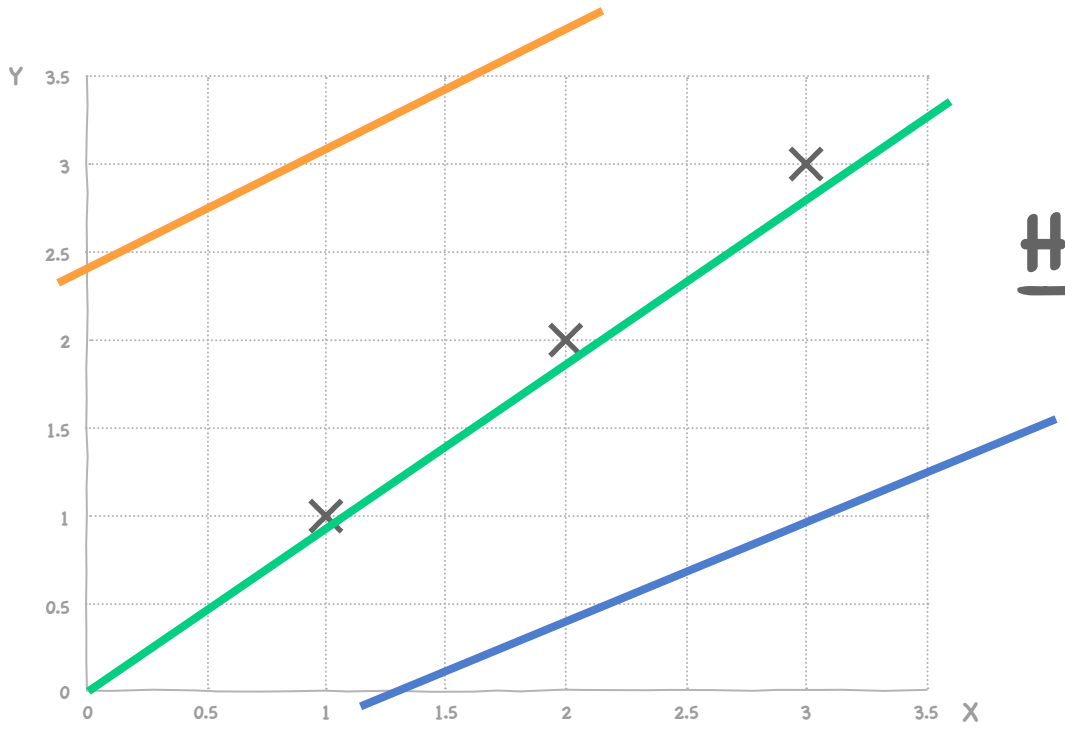
Hypothesis (Linear)



Hypothesis (Linear)

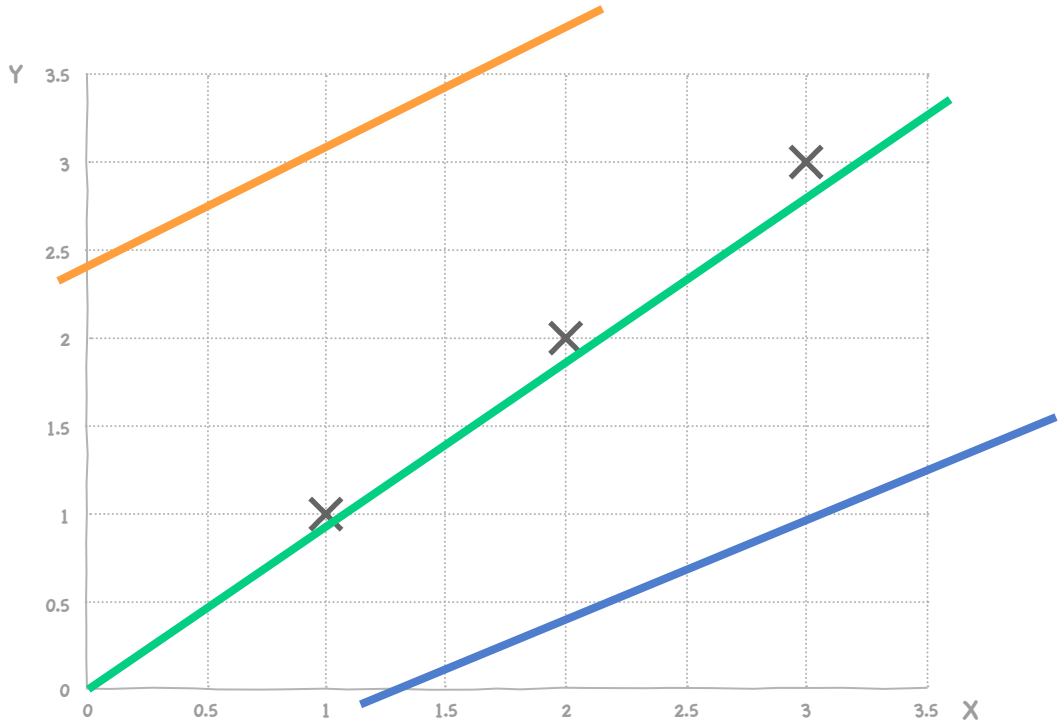


Hypothesis (Linear)

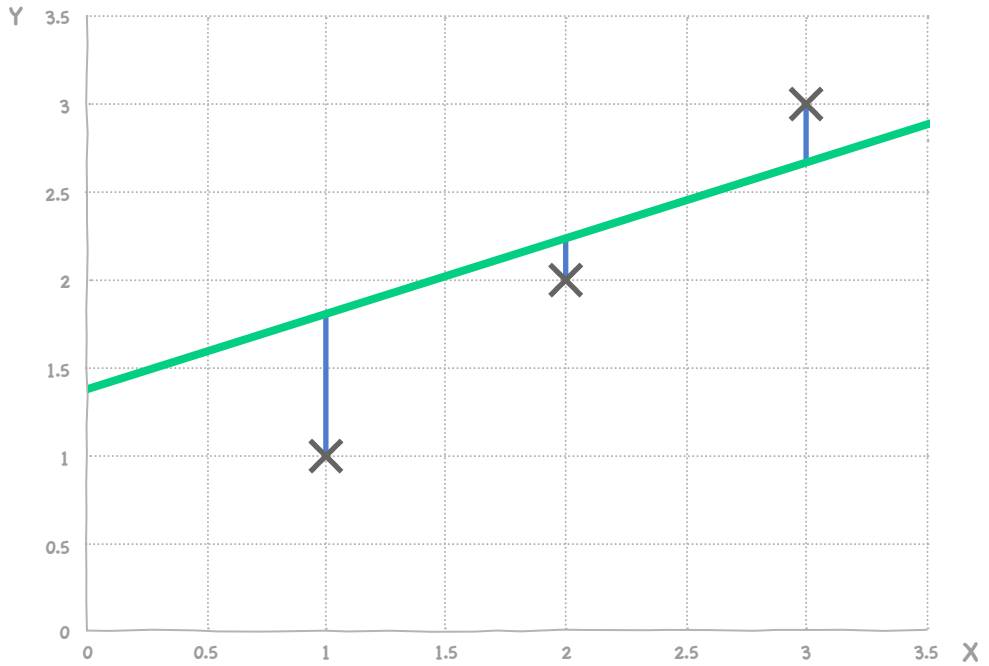


$$H(x) = Wx + b$$

Which Hypothesis Is Better?



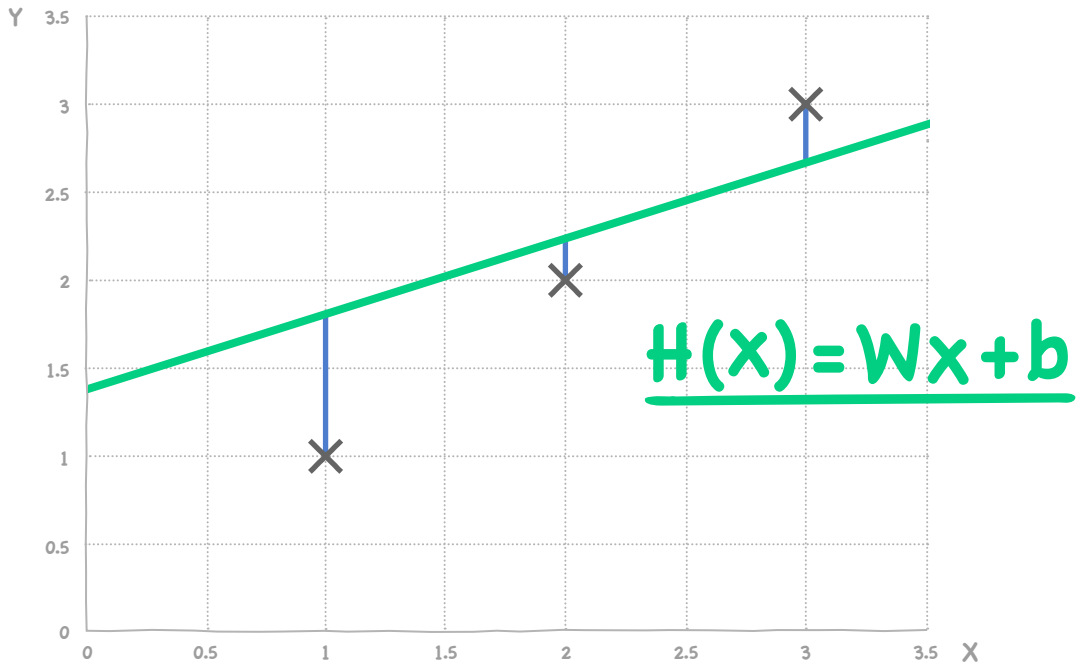
Which Hypothesis Is Better?



Cost Function

How fit the line to our (training) data

$H(x)-y$

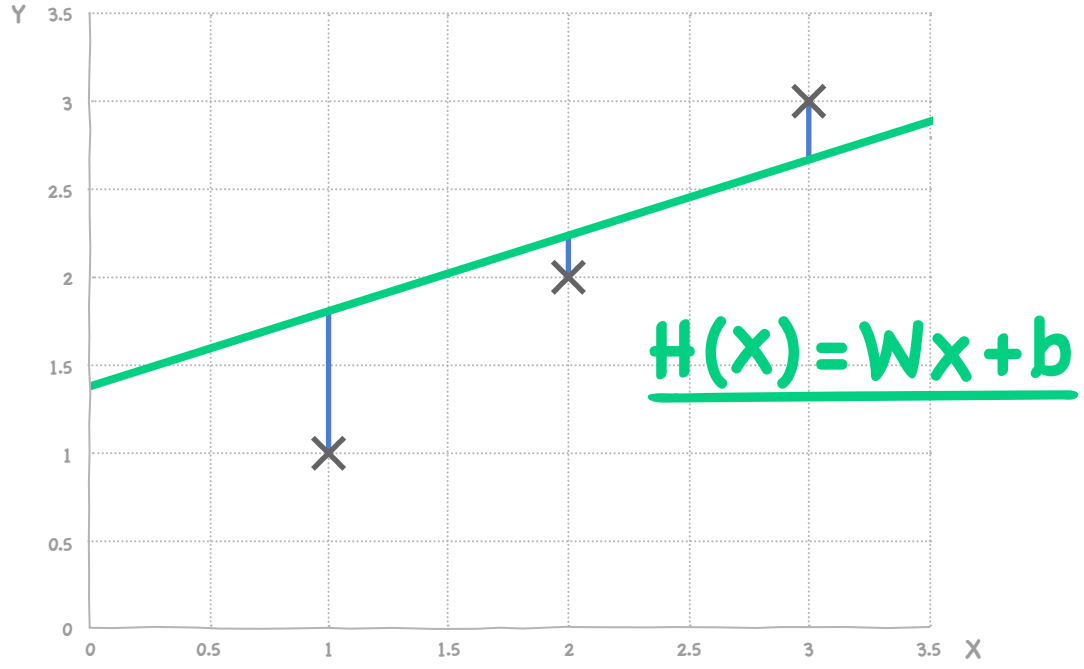


Cost Function

How fit the line to our (training) data

$$\frac{(H(x^{(1)})-y^{(1)})^2+(H(x^{(2)})-y^{(2)})^2+(H(x^{(3)})-y^{(3)})^2}{3}$$

$$cost = \frac{1}{m}\sum_{i=1}^{m}(H(x^{(i)})-y^{(i)})^2$$



Cost Function

$$cost(W) = \frac{1}{m}\sum_{i=1}^{m}(H(x^{(i)}) - y^{(i)})^2$$

$$H(x) = Wx + b$$

$$cost(W,b) = \frac{1}{m}\sum_{i=1}^{m}(H(x^{(i)}) - y^{(i)})^2$$

Goal：Minimize Cost

$$\text{Minimize Cost}(W,b)$$
$$W,b$$

NEXT LECTURE

HOW TO MINIMIZE COST