



# **Basic Machine Learning**

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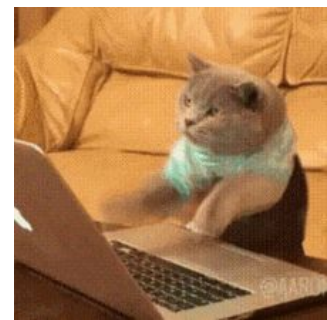
- Standpoint
- 3 Types of Machine Learning
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- Logistic Regression + Hands-On

**Standpoint**

**Machine Learning is an algorithm**

**Standpoint**

**Machine Learning is an algorithm**



# Standpoint

- \* General Perspective

## Input



# Standpoint

\* General Perspective

**Input**

**Process  
(Algorithm)**



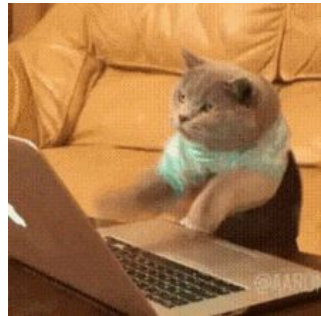
# Standpoint

\* General Perspective

**Input**

**Process  
(Algorithm)**

**Output**



# Standpoint

\* General Perspective





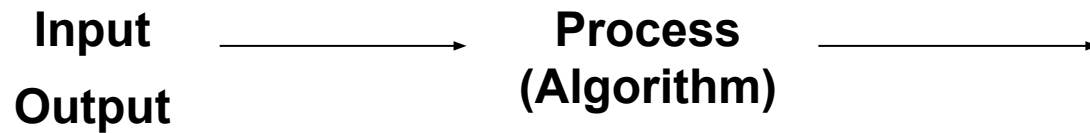
# Standpoint

\* Machine Learning Perspective



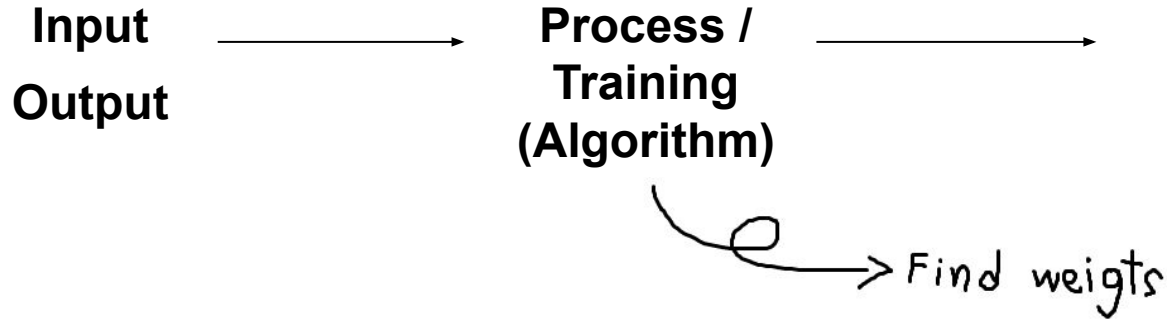
# Standpoint

\* Machine Learning Perspective



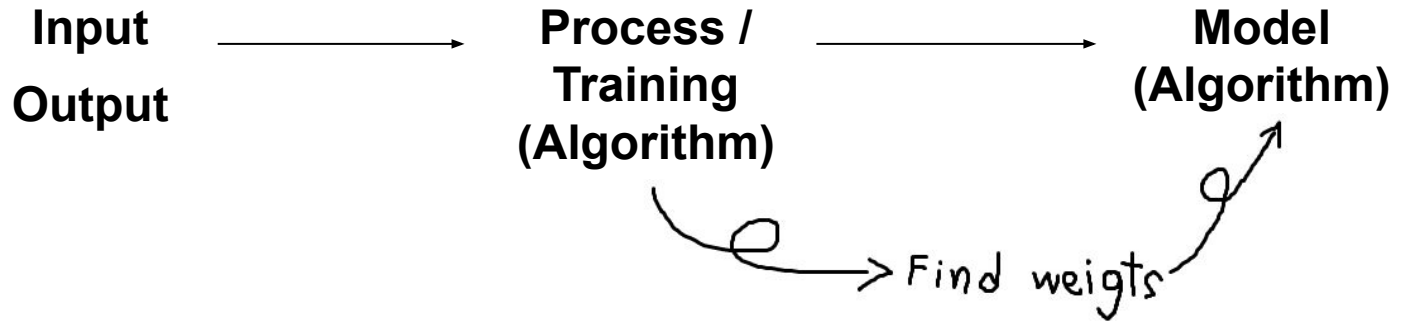
# Standpoint

\* Machine Learning Perspective



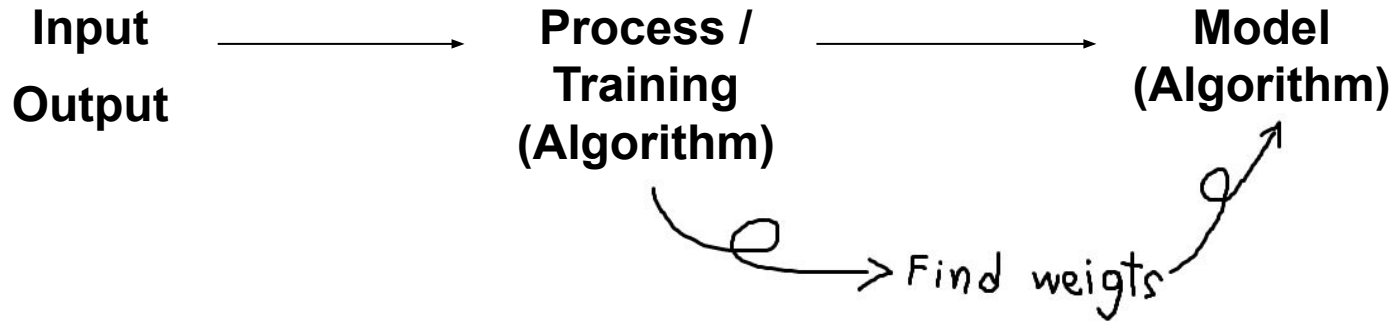
# Standpoint

\* Machine Learning Perspective



# Standpoint

\* Machine Learning Perspective



\* Disclaimer : The modal is based on supervised learning.

## Standpoint

\* Machine Learning Perspective



### 3 Types of Machine Learning

1. Supervised Learning
  - XY  $\rightarrow$  Algorithm
2. Unsupervised Learning
  - Finding pattern in a data
3. Reinforcement Learning
  - Learn by doing

## 3 Types of Machine Learning

### 1. Supervised Learning

- XY  $\rightarrow$  Algorithm

\* In fact, Andrew Ng once said that more than 80% of problems involve supervised learning.

### 2. Unsupervised Learning

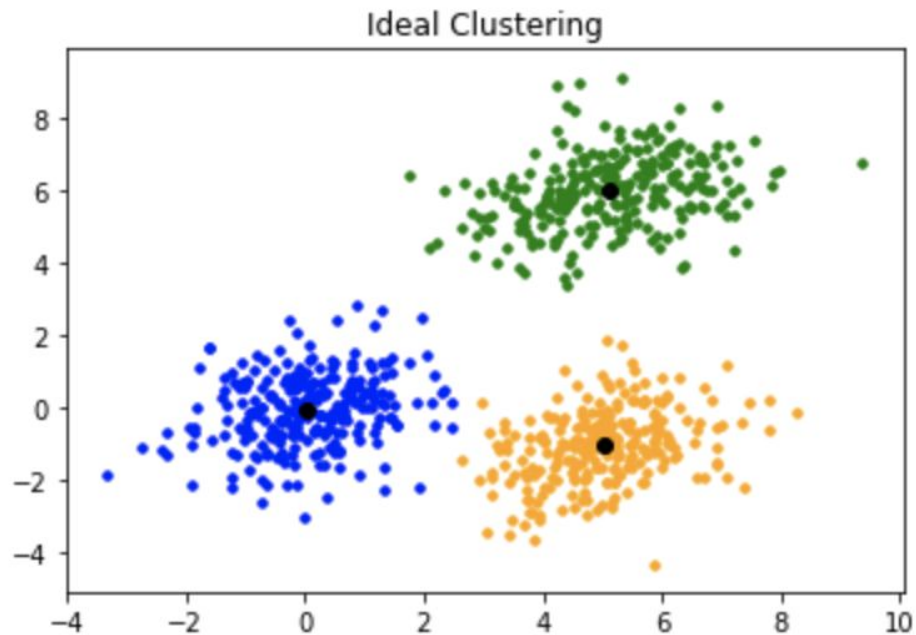
- Finding pattern in a data

### 3. Reinforcement Learning

- Learn by doing

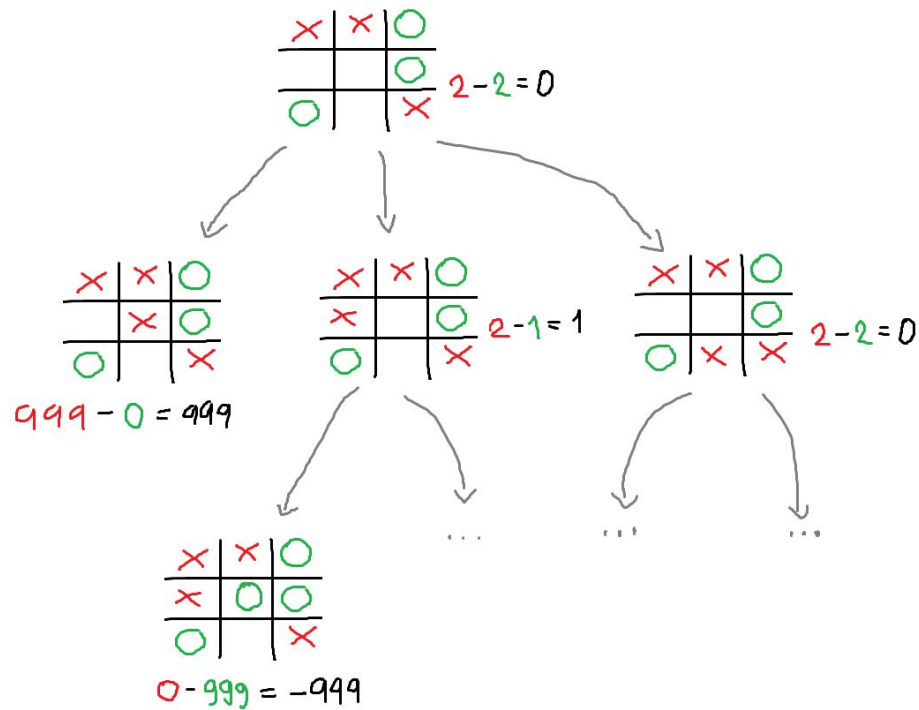


# Unsupervised Learning

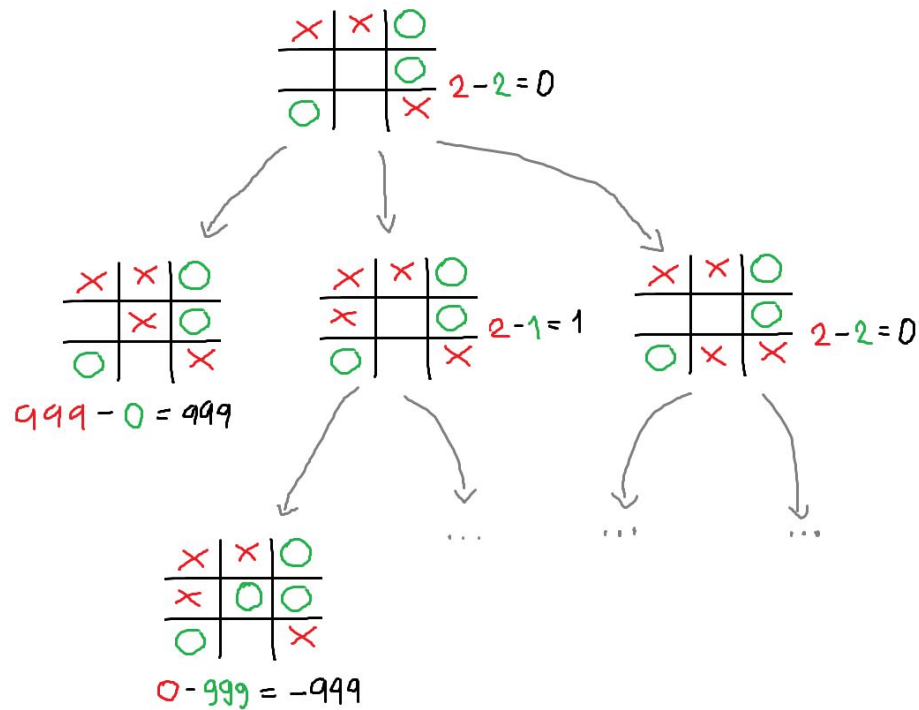


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# Reinforcement Learning



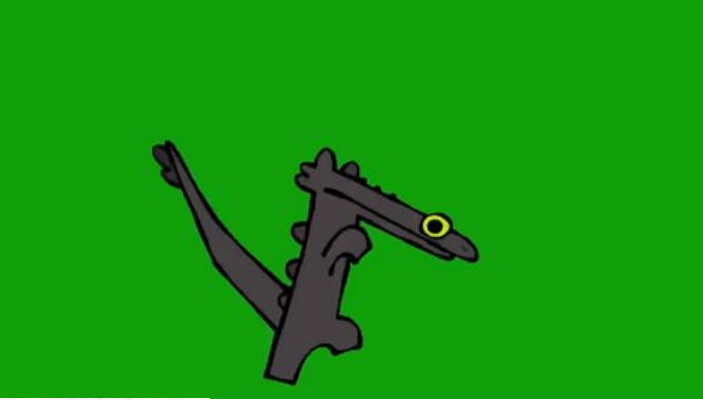
# Reinforcement Learning



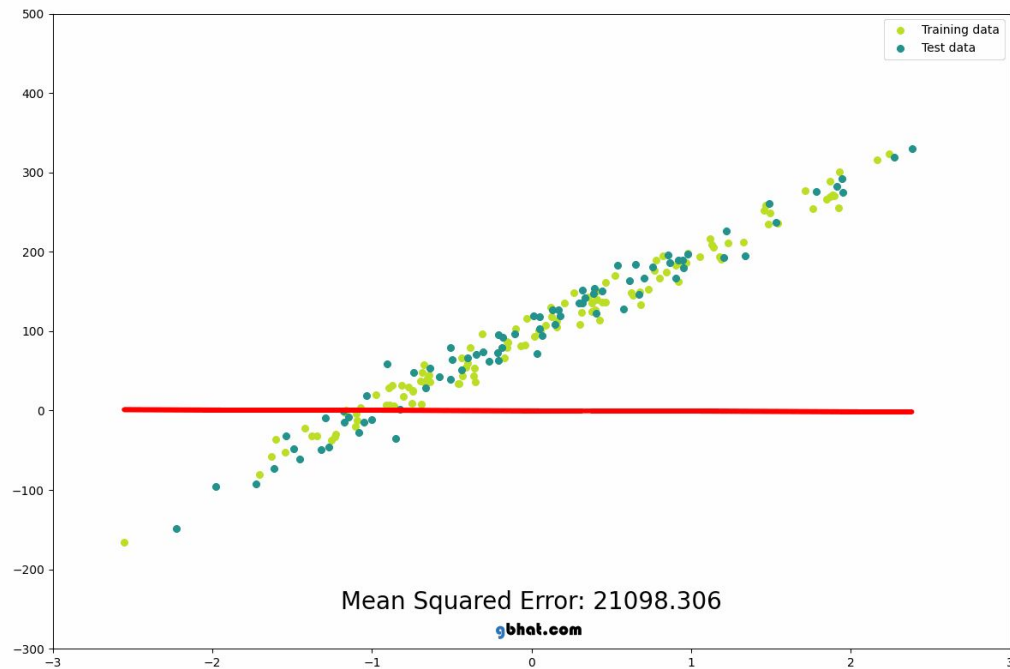
**All honest reaction**



**Get Ready !!!**

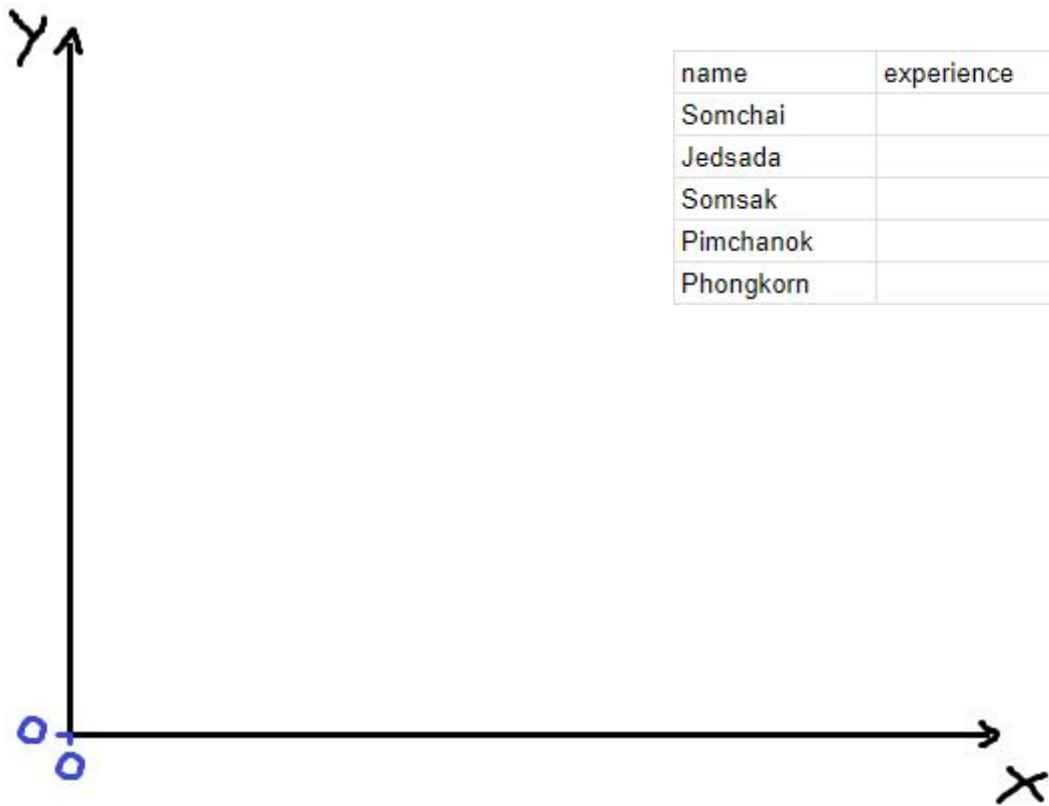


# Linear Regression

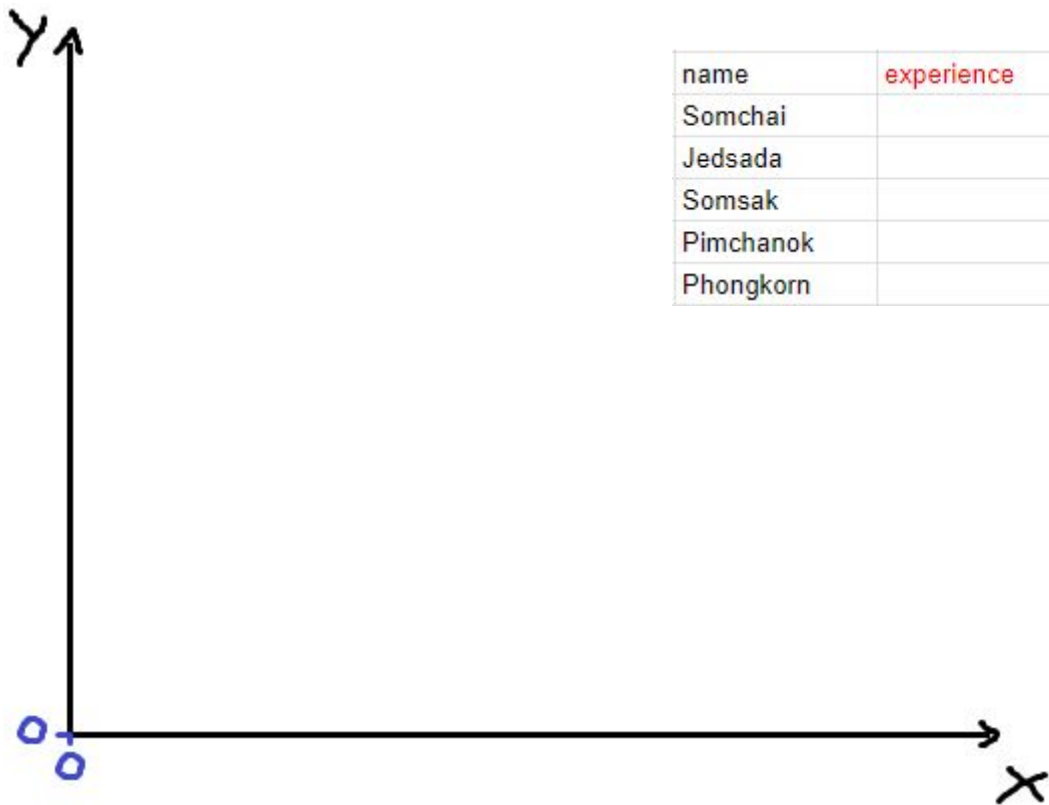


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# Linear Regression



# Linear Regression



name	experience	salary
Somchai	2	30000
Jedsada	1	15000
Somsak	2	37000
Pimchanok	4	20000
Phongkorn	5	50000

# Linear Regression



Input

name	experience	salary
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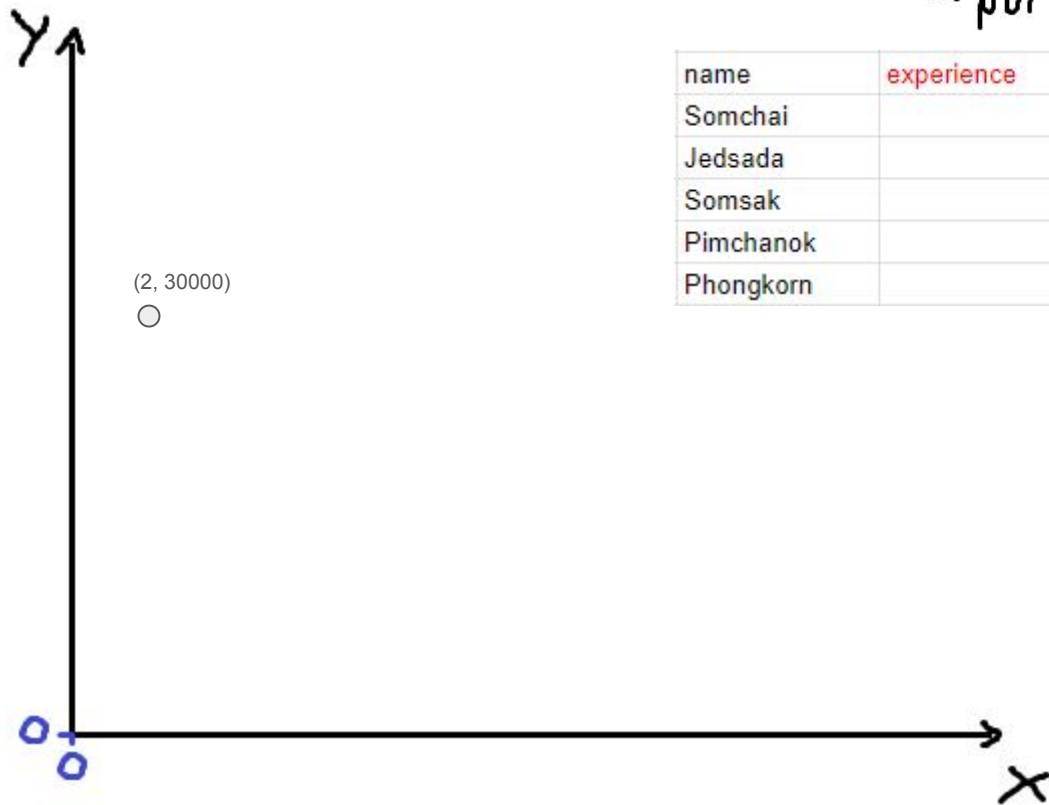
## Linear Regression



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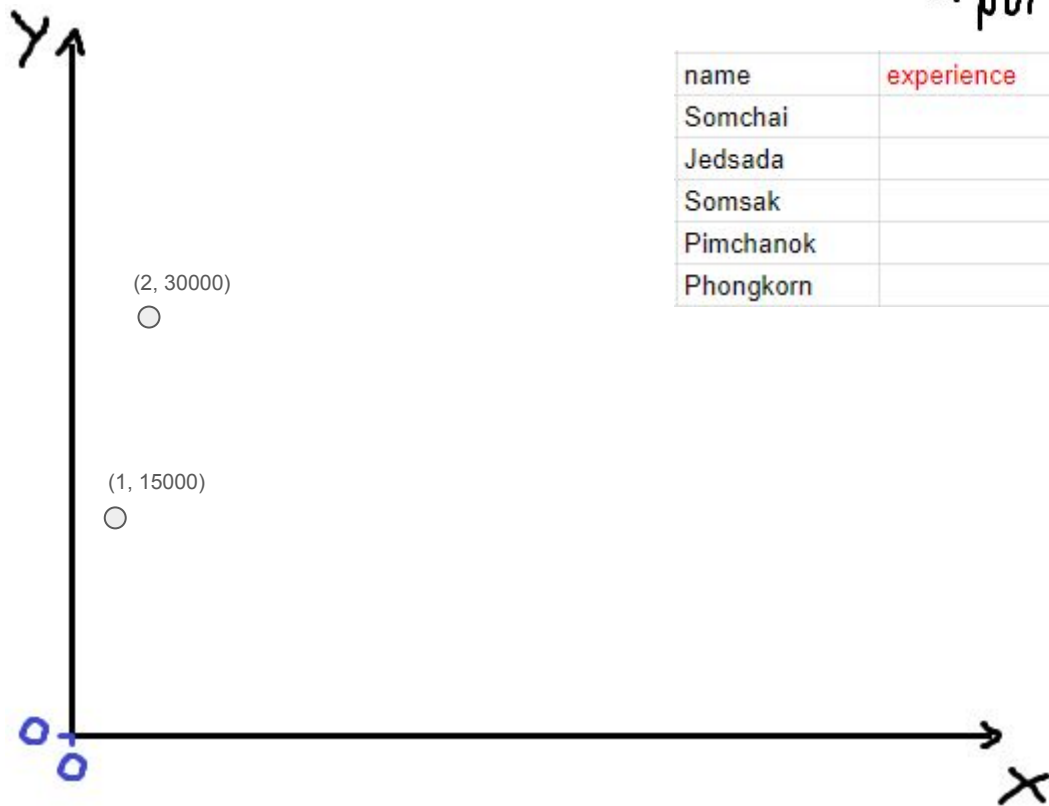
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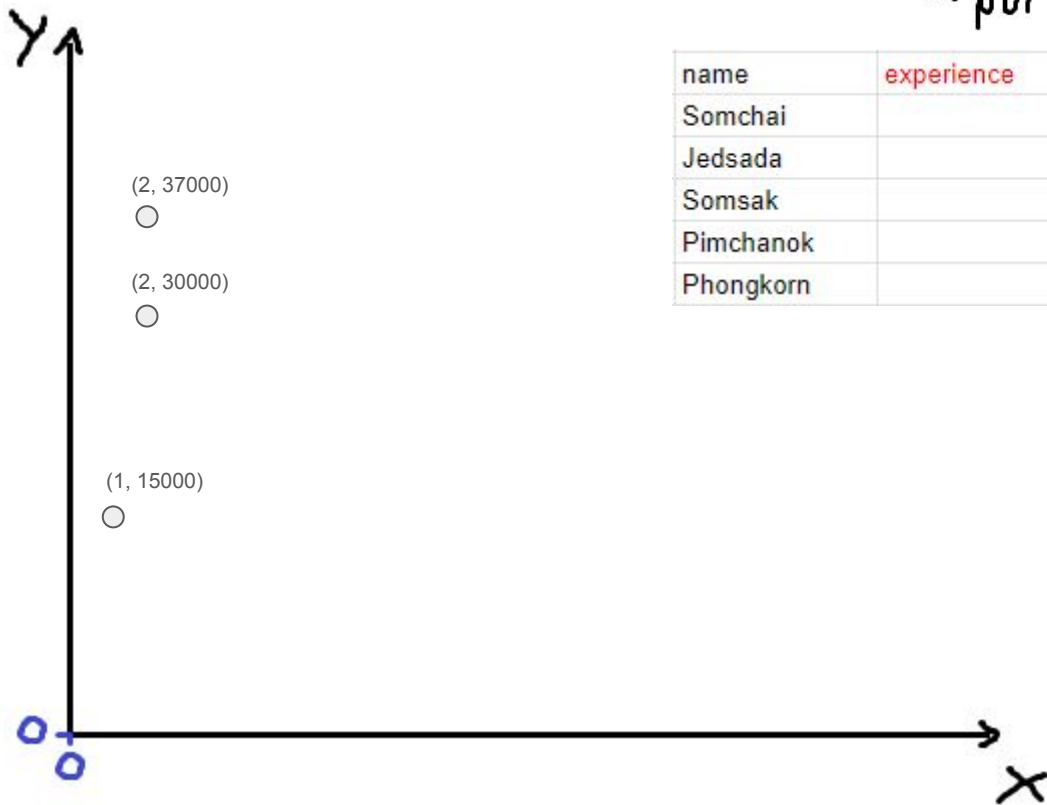
# Linear Regression



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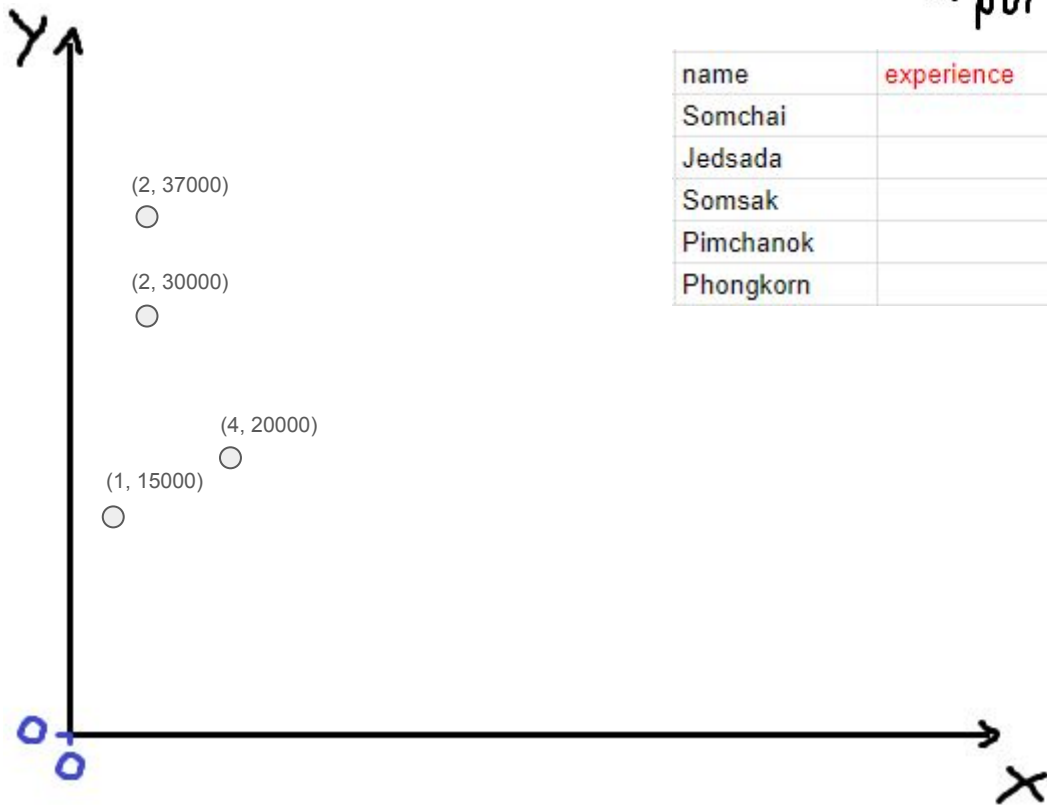
# Linear Regression



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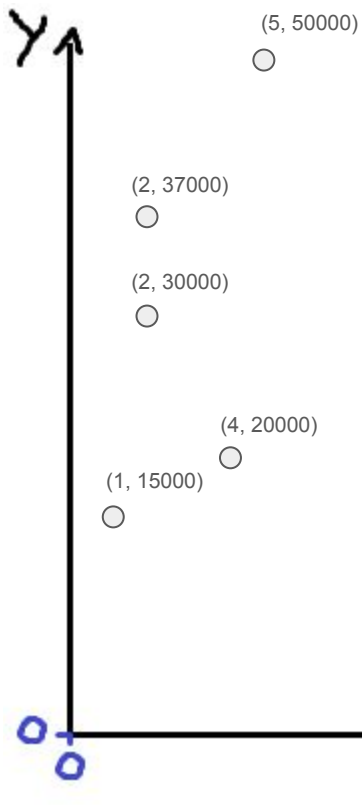
# Linear Regression



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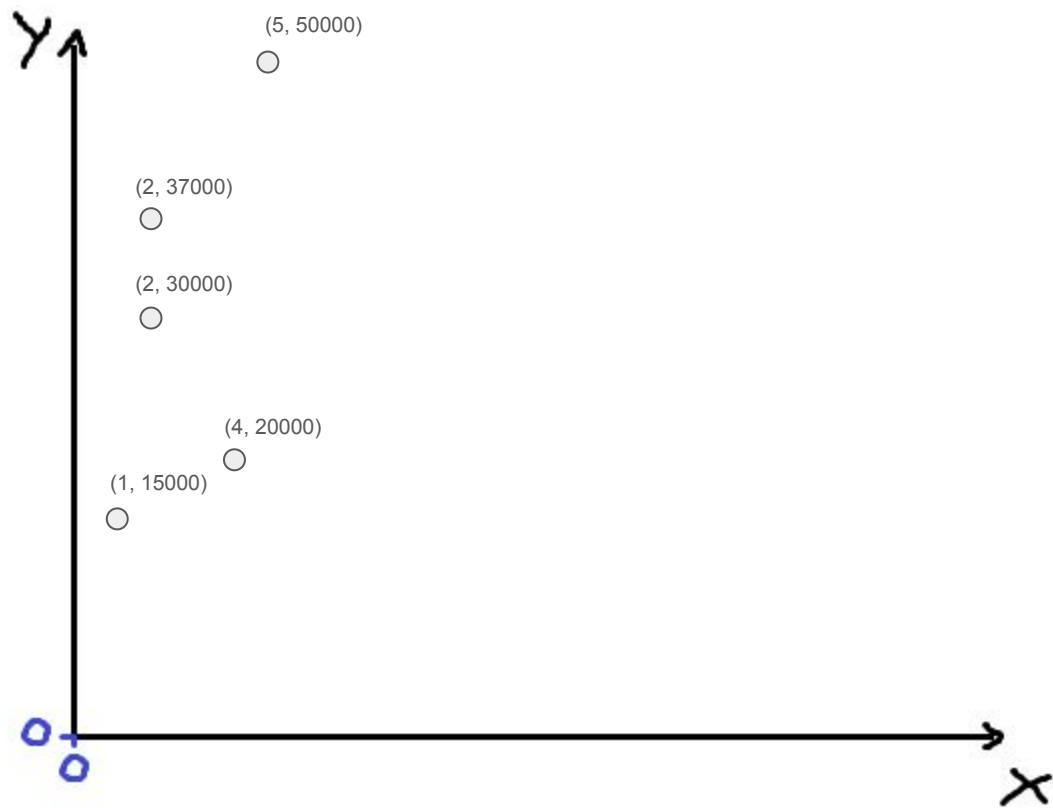
# Linear Regression



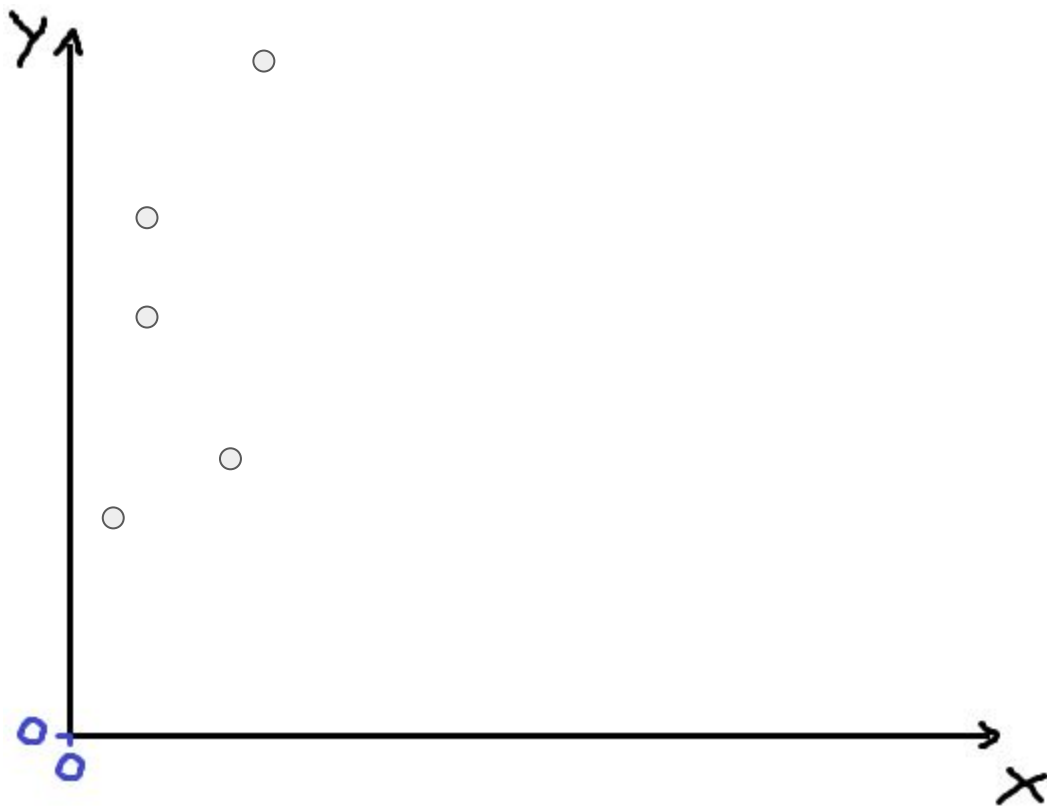
Input Output

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# Linear Regression

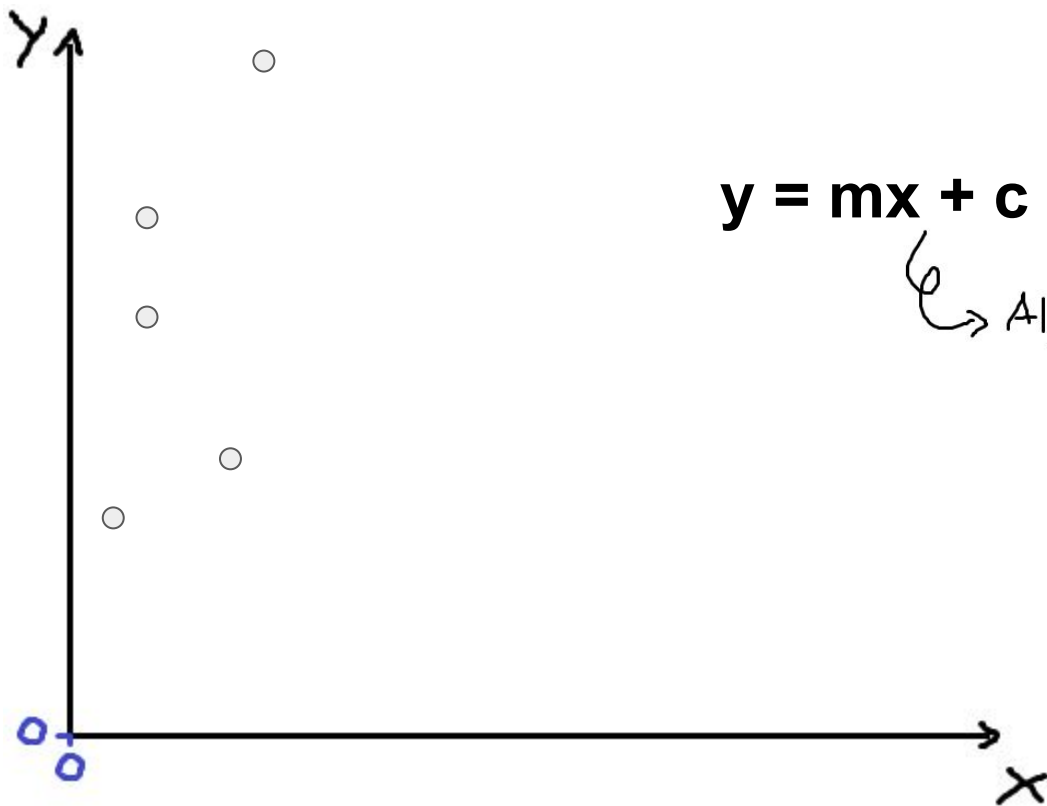


# Linear Regression

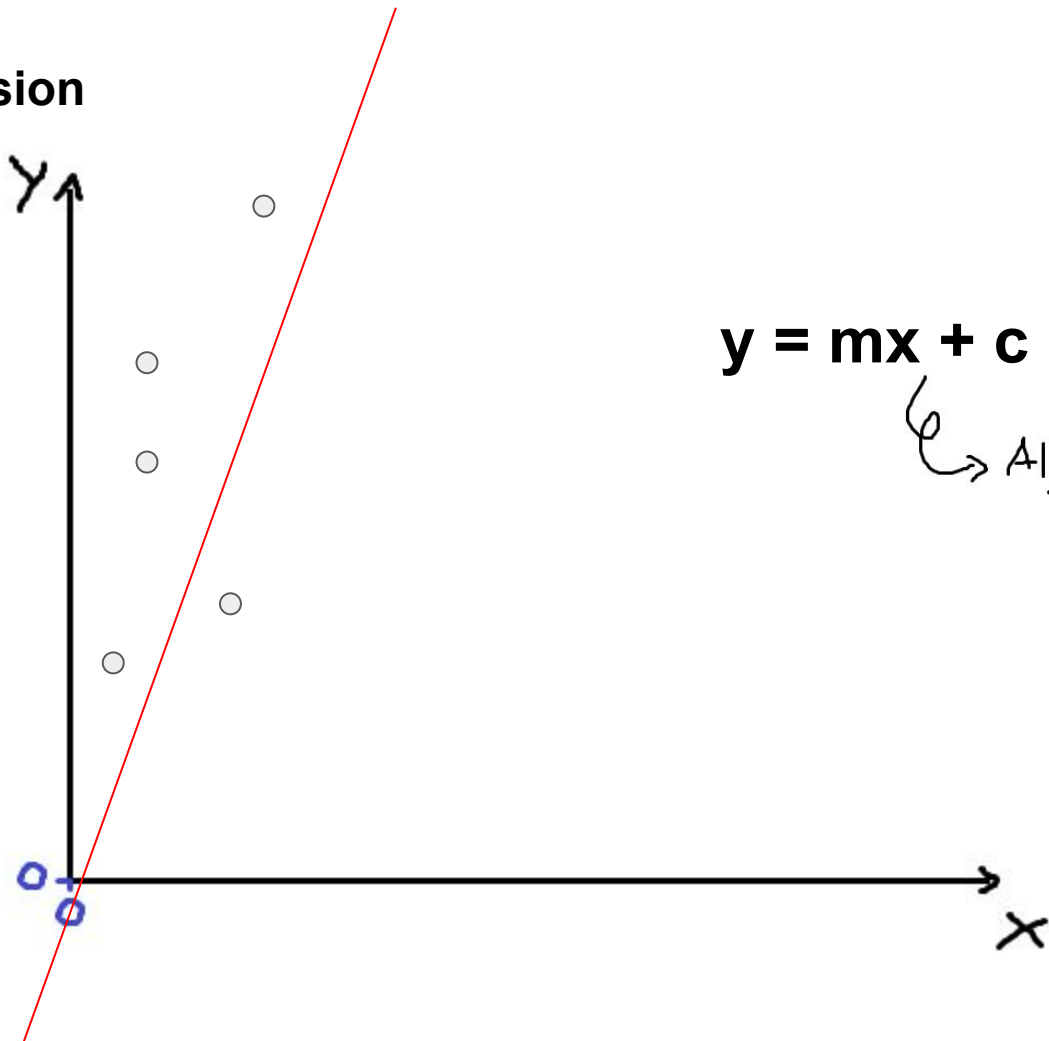




# Linear Regression



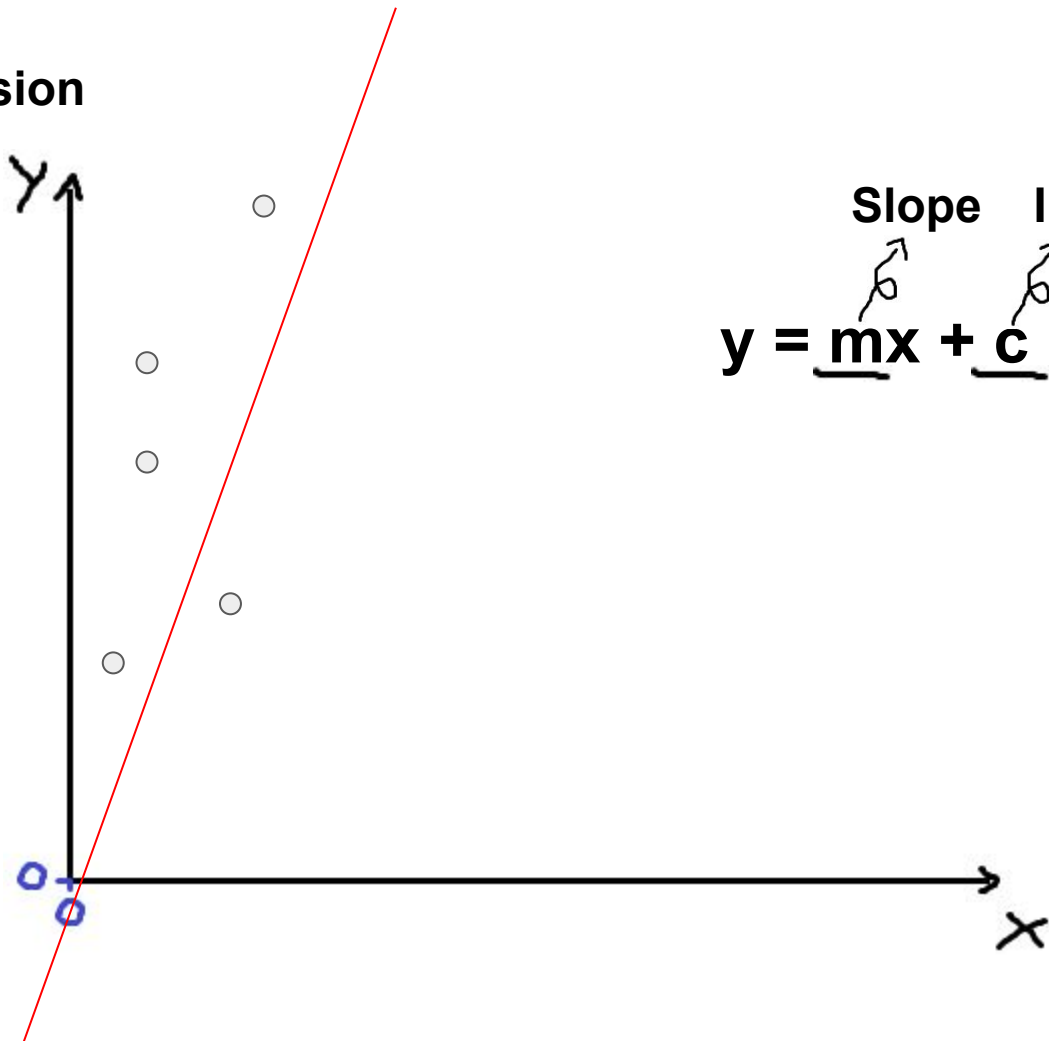
# Linear Regression



$$y = mx + c$$

Algorithm

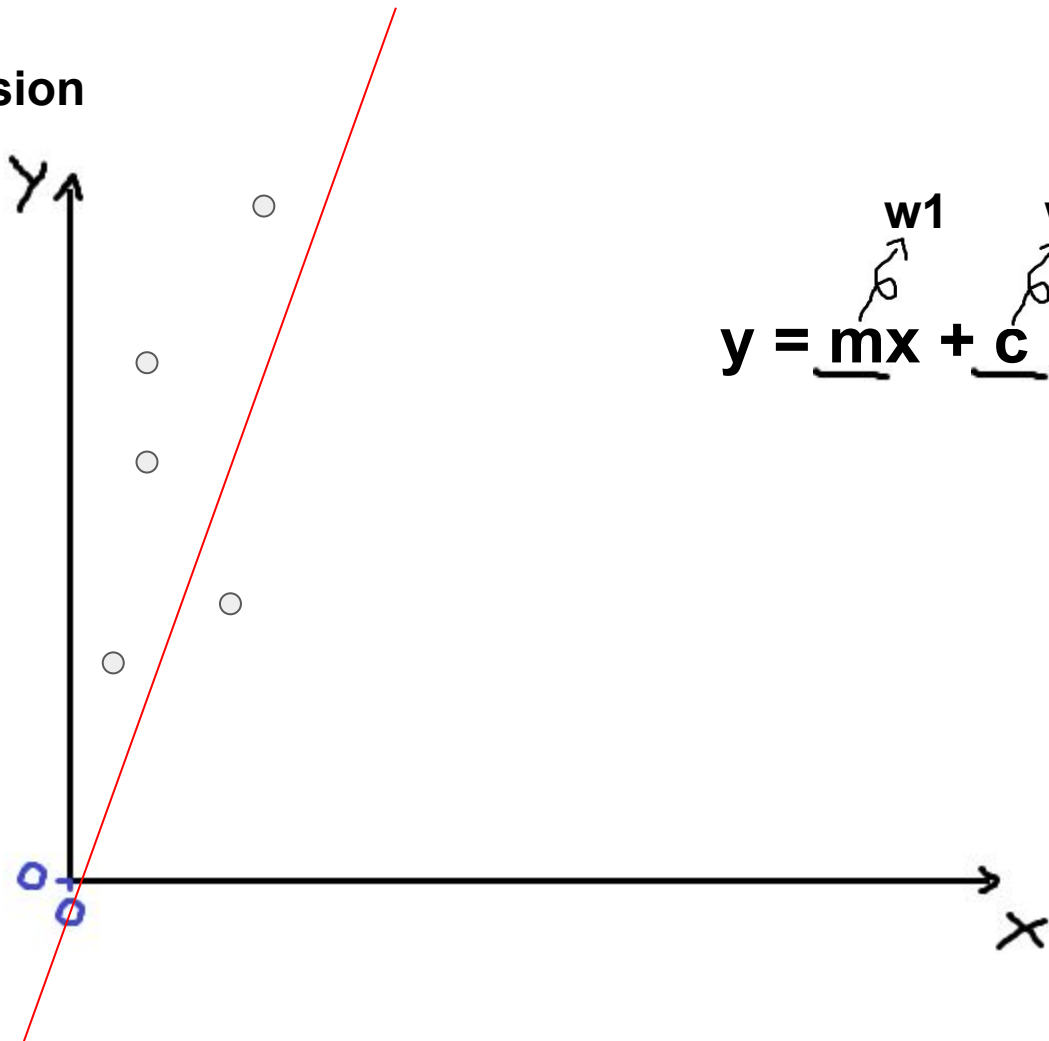
## Linear Regression



Slope Intercept

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

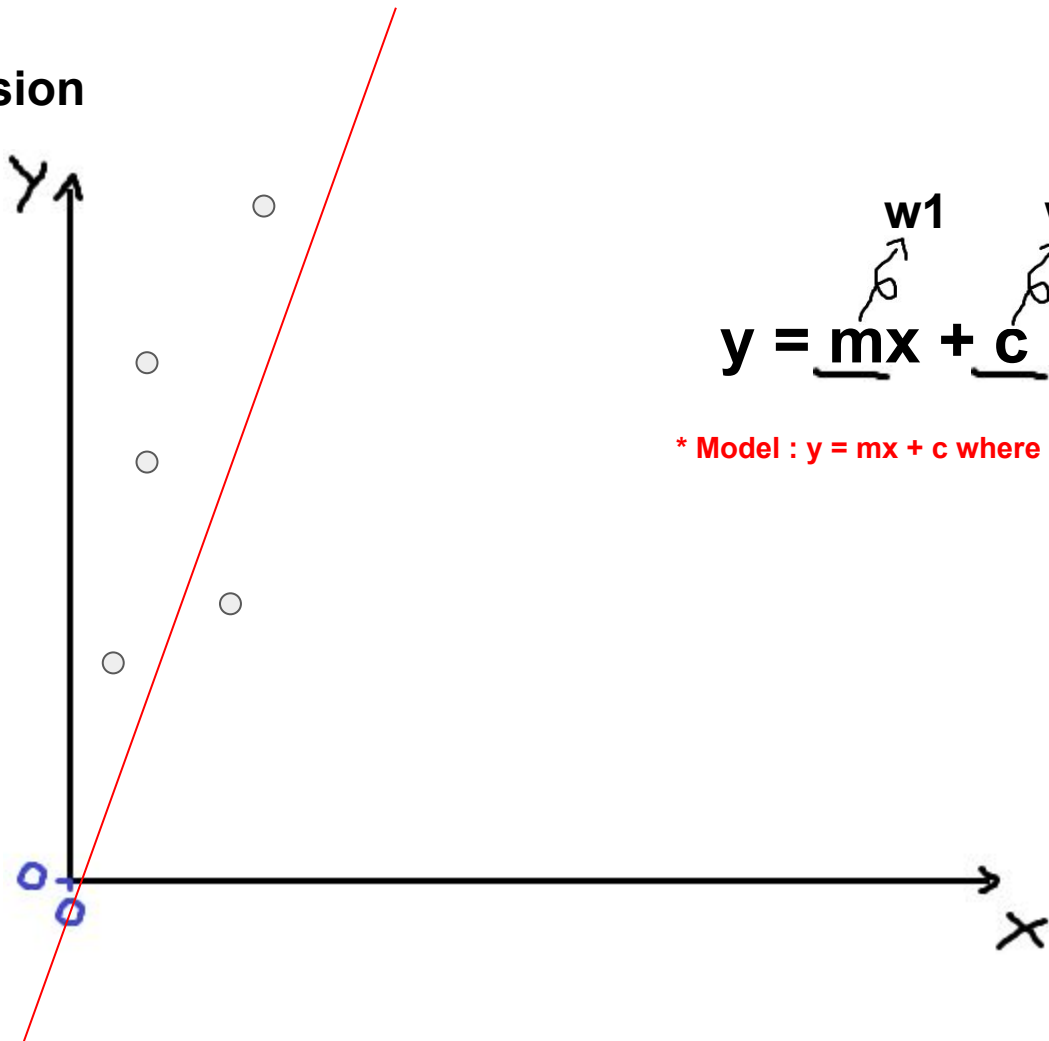
## Linear Regression



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

$w_1$  points to  $m$   
 $w_0$  points to  $c$

# Linear Regression



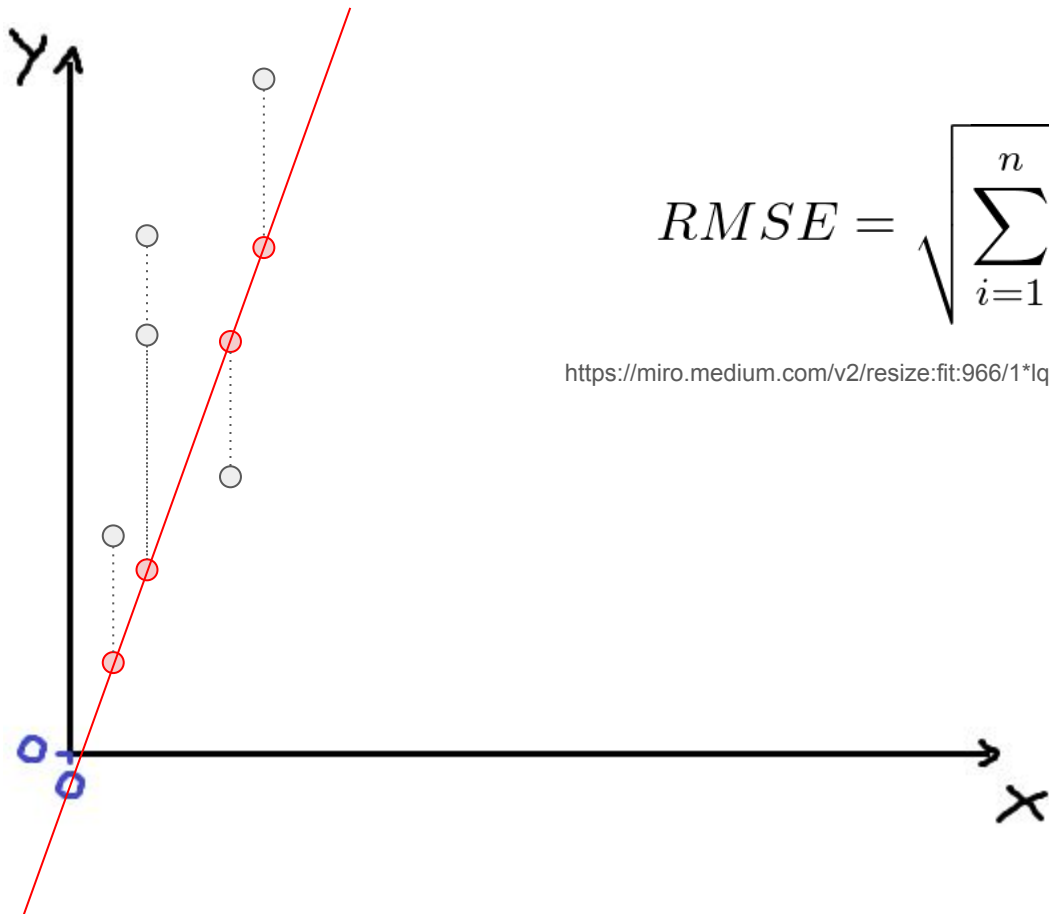
$$y = \underbrace{m}_{w1}x + \underbrace{c}_{w0}$$

\* Model :  $y = mx + c$  where  $m, c$  is appropriate weights.

# Let's get hands-on



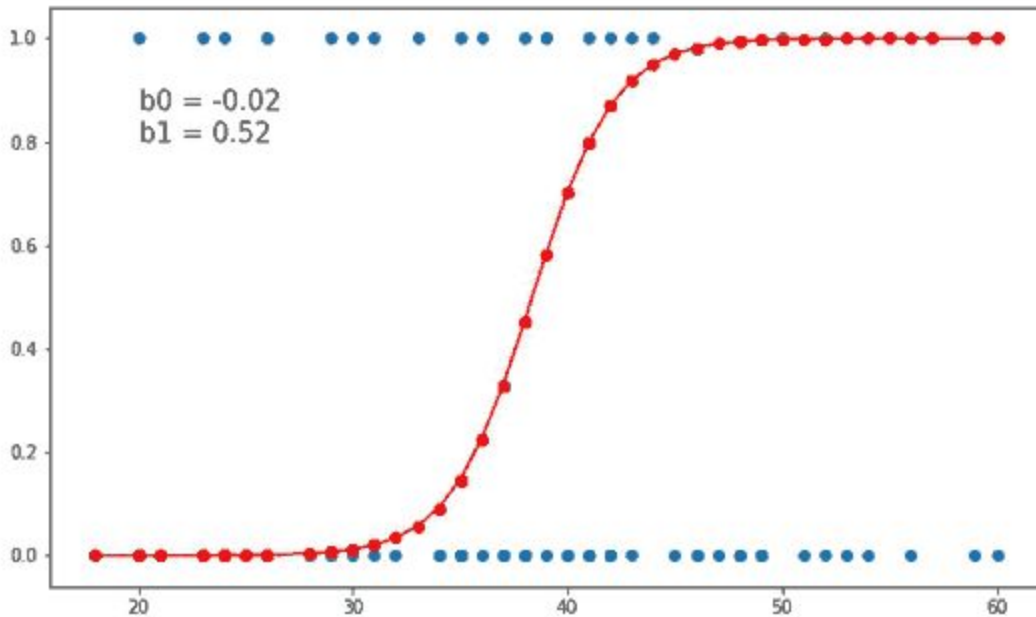
## Linear Regression : Loss & Cost Functions



$$RMSE = \sqrt{\sum_{i=1}^n \frac{(\hat{y}_i - y_i)^2}{n}}$$

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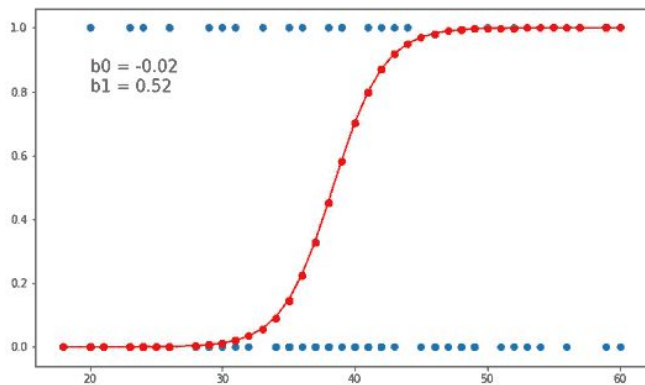
# Logistic Regression



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# Logistic Regression



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$$y = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$$

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# Let's get hands-on



**Thank you !!!**