Recap:

Linear Regression ML Algo

→ Theory

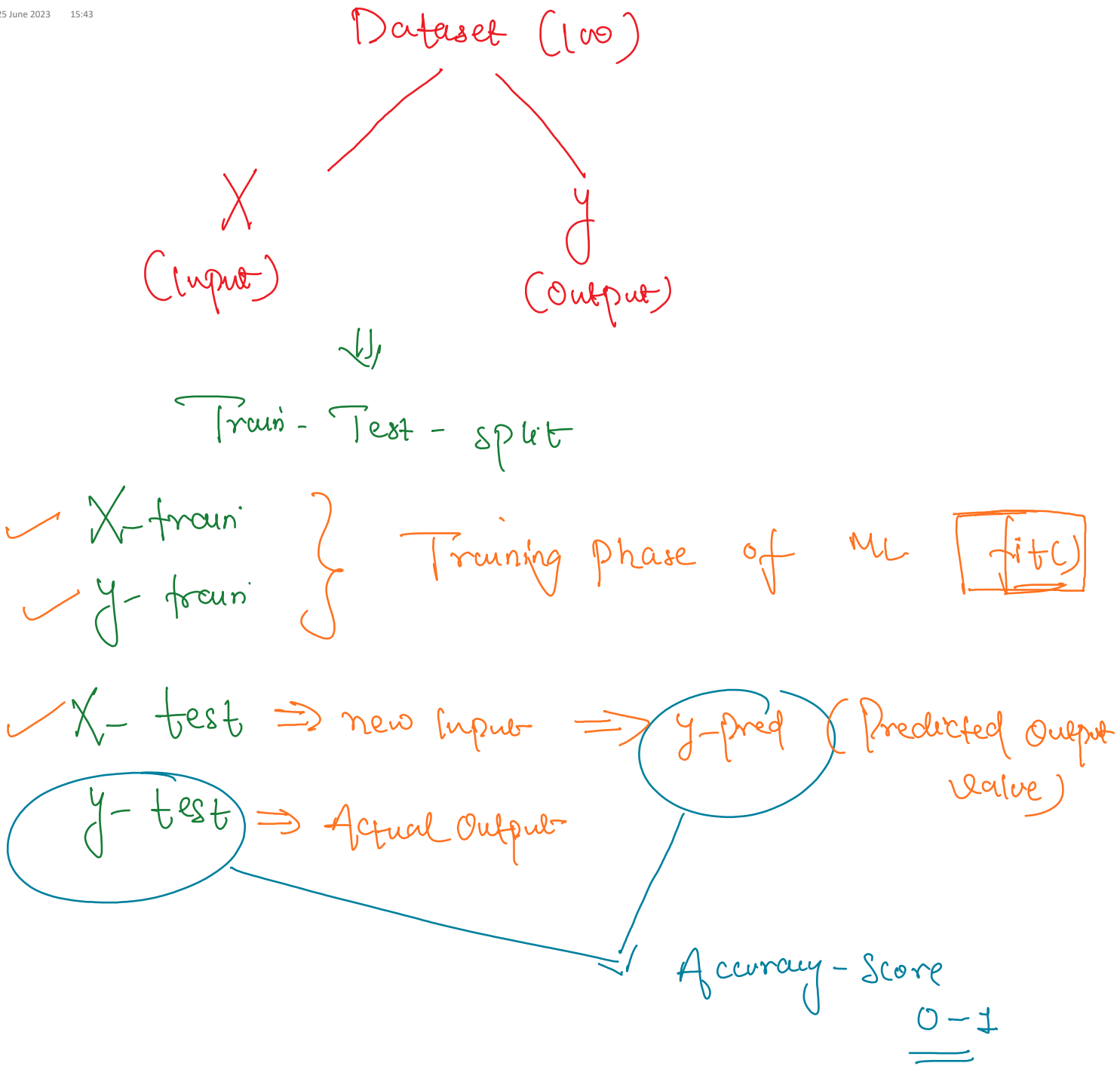
→ Maths

→ Practical Implementation

Agenda :-

→ Multiple linear Regression

→ Logistic Regression →


Dataset (100)
X
(Input)
y
(Output)
Train - Test - split
X-train
y-train
Training phase of ML
fit()
X-test ⇒ new input ⇒ y-pred (Predicted output value)
y-test ⇒ Actual Output
Accuracy - Score
0 - 1

Multiple linear Regression

$$y = \beta_0 + \beta_1 x_1$$

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 \cdots \beta_n x_n$$

In multiple linear regression we have multiple input column and single output column

Mean Square Error:

* We always try to reduce the MSE
* Accuracy ↑ Error ↓

Root Mean Square error:

$$RMSE = \sqrt{MSE}$$

Performance : (i) r2-score → Accuracy

$\sqrt{16} = 4$

$4 \times 4 = 16$

$\sqrt{64} = 8$

$\sqrt{121} = 11$

(ii) mse → error rate

(iii) rsme = $\sqrt{mse}$

25 June 2023 17:04

Logistic Regression ML Algorithm

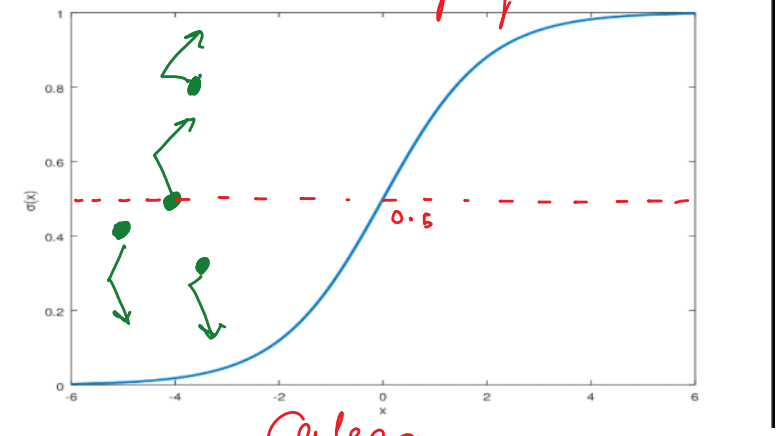
ML

- Supervised
- Unsupervised
  - Regression
  - Classification

- It is a Supervised ML Algorithm.
- It is used to solve Classification type of problem.
- Classification data → you will have classes in Output data.
- Logistic Regression can solve only Binary Classification problem [0,1]

How Logistic Regression works!

Category 1



Sigmoid function

Category 0

⇒ Answer in Range of [0 - 1]

If Answer < 0.5 :

Category 0

If Answer ≥ 0.5 :

Category 1

formula of Sigmoid function

$$\frac{1}{\quad}$$ where

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

where

x = input data

if $y \geq 0.5$:

    Answer 1

else:

    Answer 0