

Python Programming

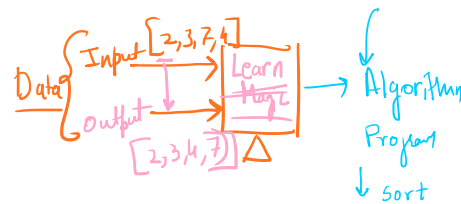
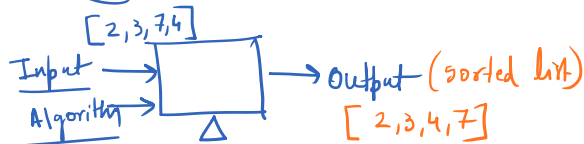
Machine Learning

Task: Sort a list

[2, 3, 7, 4]

• Writing a set of Rules : Programming

- Take
- Min element
- swap



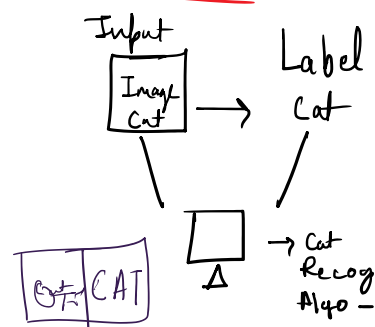
→ Learn steps Input output

Cat

Python cat

If eyes == 2, tail == 1
legs == 4
(Print "cat") } Cat/Dog

Machine



Machine Learning is same as Human Learning

Help

• Data Science → Data → Insights

• Data Analyst → Analyse }

• AI/Robotics : End to End solⁿ

• Predictive Analytics : Predicting

• Business Intelligence : Tableau/ Power BI

• Deep learning : Human Brain

• Machine Learning :

• Data Engineer :

Jerin weather

Jerin forecast

Machine Learning

Supervised

Unsupervised

Reinforcement

Supervised Learning

Task : Learn how to ride a cycle

• FATHER : Make any mistake , FATHER is going to correct

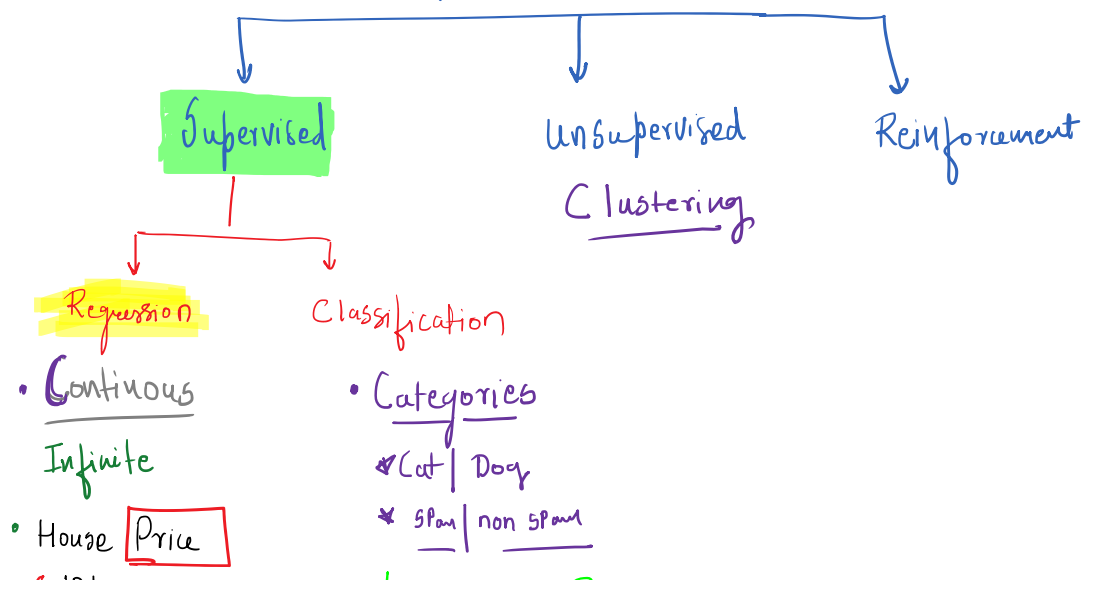
↓
Supervision : Correct and → Teach



child
when you learn without a supervision
Unsupervised learning

Reinforcement : Penalty
Rewards

Machine Learning



- House Price
 - 10 L
 - 15 L
 - 17.341728 CR
 - 1.111111 L

* span | non span

Logistic Regression

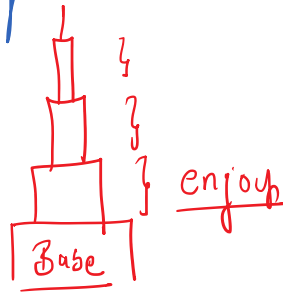
Salary

Linear Regression

Simple Multiple

Linear Regression

Basics



- Relationship between two or more Variables

Predict the House Price

Continuous

{ Linear Regression }

Var1
sq m
100
1000

Independent

Var2
Price

Dependent

Relationship

sq m

Price

Independent
Var

Dependent
Var

$$Y = \underbrace{m}_{\text{Slope}} X + \underbrace{c}_{\text{Intercept}}$$

Price

Var feature Sqm

Y is dependent on 3 values m, x, c

X is independent $\rightarrow x$ would never change, m, c, y

| Location | Sqm | Price |
|----------|------|-------|
| MUN | 300 | 70 L |
| Rural | 700 | 20 L |
| Rural | 1400 | 40 L |
| MUM | 400 | 100 L |

X_2 X_1 Y

Independent Dependent

Simple Linear Regression

X • Independent var 1 }
 Y • Dependent var 1 } \uparrow

Multiple Linear Regression

X • Independent var ≥ 1
 Y • Dependent var 1

Simple
Linear
Regression

| heights | |
|---------|-----|
| 20m | 79 |
| 40m | 89 |
| 100m | 101 |

y

Logistic

| height | Will it Rain |
|--------|--------------|
| 20m | 0 - No |
| 40m | 1 - yes |
| 100m | 0 - |

x y

Category

Classification

| Locati | Pool | Swim | House Type | |
|--------|------|------|------------|---------|
| R | 1 | 1200 | Big | c_1 A |
| M | 0 | 200 | Small | c_2 B |
| M | 0 | 700 | Medium | c_3 O |

Predict

| Locati | Pool | Swim | House Price |
|--------|------|------|-------------|
| R | 1 | 1200 | 2 CR |
| M | 0 | 200 | 2 CR |
| M | 0 | 700 | 8 CR |

x_1 x_2 x_3 y

Regression
Multiple
LR.

y_{he}
 c_1 A
 c_2 B
 c_3 O

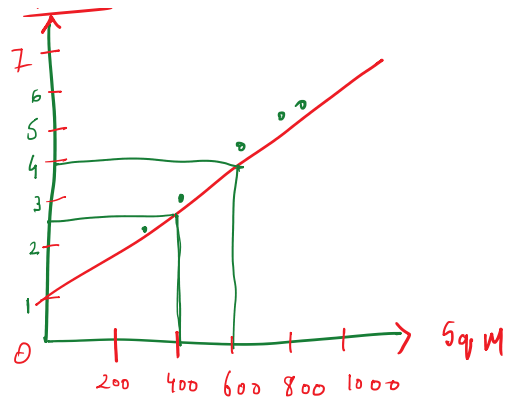
$$y = \underline{Mx} + C$$

Price
dependent

Price

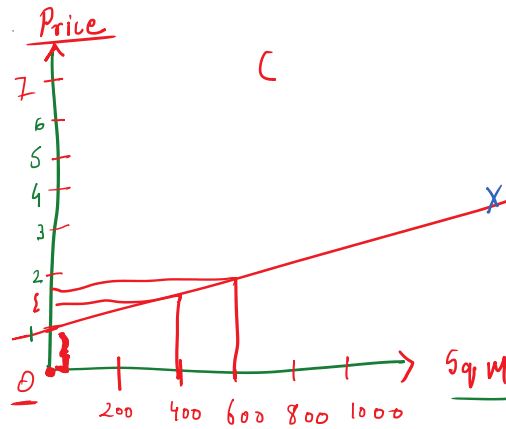
independent

M - slope of
line
 $\frac{\Delta y}{\Delta x}$



Aayush

$$\frac{400 - 600}{1.5 \text{ CR}}$$



Part 2

Aayush → I would change the slope

$$\frac{400 - 600}{2 \text{ CR}}$$

2 CR

20 L

Trees

$$C \rightarrow \frac{\text{Intercept}}{X = 0}$$