

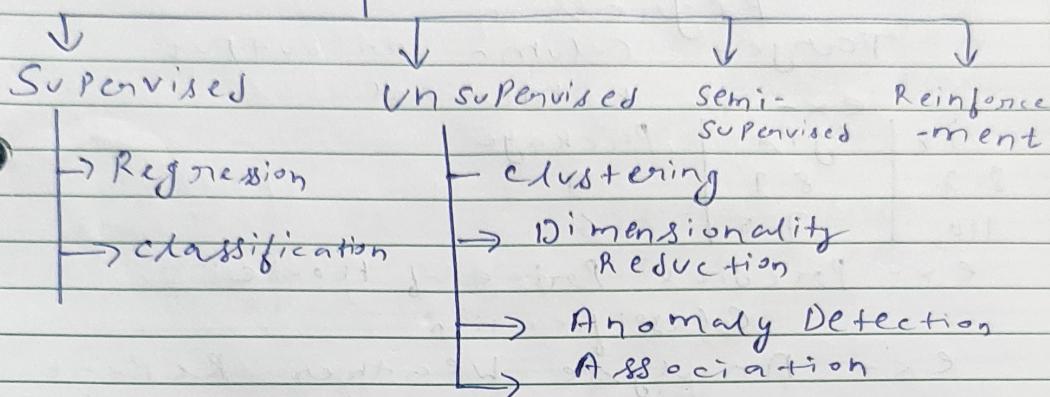


MACHINE LEARNING × CAMPUSX

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ML is a technique that allow machine to learn from experience and make Prediction or Decision Without being explicitly Programmed.

Types of ML



Supervised learning
labelled Data set

iv	cGPA	Placement	5000 Student Data Provided
87	7.1	Y	→
70	8.9	Y	→
90	6.1	N	→

Machine automatically find Patterns and give result to new input.

- ① If you have Dataset that include input and output both and you have to understand relationship b/w input and output and give Prediction on new input then this type of ML is supervised.



Data types

Numerical

- Age
- Weight
- CGPA
- IR

Categorical

- Gender
- Nationality

Regression

Target column or output

Ex - is numerical.

IR	CGPA	Package
8.7	8.9	7
11.0	7.5	6

Ex - Predict Price of House

Classification

Ex - Analyse Weather Report
and tell Rain will occur
or not.

○ If Dataset has both input and output then it is Supervised

○ Regression hai ya classification
you need to see output column

○ If number → Regression

○ If category → classification

Unsupervised ML

○ In this you only have Input.
Ex -

Suppose you have Placement
Dataset.

IR	CGPA
7.5	7.1
8.2	9.0
11.0	7



① In clustering

It helps to divide or separate the student with more similar one group together.

Suppose you have e-commerce platform and you want to know what kind of customer are there.

② Gender ③ Age

Separating these entities will help to customize the business operation.

④ Dimensionality Reduction

Reducing the number of feature in a dataset while keeping important information.

If your data has too many columns, dimensionality reduction helps to remove unnecessary one to the

Why Useful?

⑤ Reduce overfitting - less noise

⑥ Improve speed - less computation

⑦ Better accuracy - focus on useful data

⑧ Easy visualization - can plot in 2D and 3D.



N ⑤ Anomaly Detection

- ↳ used in Fraud Detection

⑥ Association

ex - In a mall, things are quite organize And How this organization of product appear?

↳ you analyse the bill generated in one or two year and see what kind of product are purchased.

ex - If customer buy milk then there is 70% chance that it will buy egg also. So these product are put together.

C ⑦ Semi-Supervised

The model learns from a small amount of labeled data and large amount of unlabeled Data.

You teach computer with :

- ↳ Few example with answer
- ↳ Many example without answer and it learn from both.

Ex -

You have 1000 image of animals:

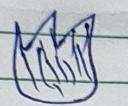
- ↳ only 100 image labeled as cat and dog.
- ↳ 900 images have no labels.



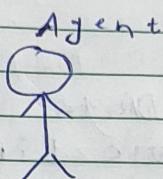
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④ Reinforcement

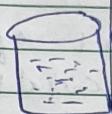
- ① It does not have any data.
- ② It learns by doing it.
ex - self Driving car
ex - environment



Fine



Agent



water

① Observe

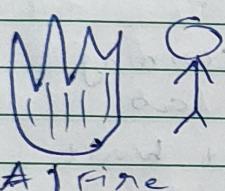
- ② select action using Policy

③ Action

- ④ Get reward or Penalty

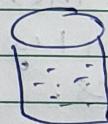
- ⑤ Update Policy (Learning)

- ⑥ Optimal Path found



A Fine

- 50 points



M = bad
Avoid it

