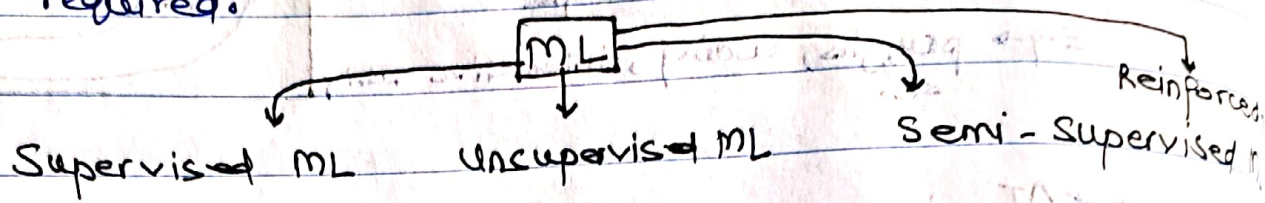


## Day-3: Types of ML

1A : 17 Dec, 24

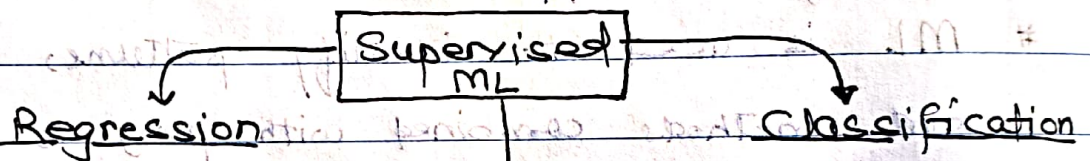
→ Discussion based on how much supervision is required.



### # Supervised ML:

When you have features as well as target, and use them to train your model.

We use the model to then work on new data and make predictions for target.



\* When 'target' is numerical, the method  $\Rightarrow$  "Regression"

\* When 'target' is categorical, then method  $\Rightarrow$  "Classification"

\* E.g  $\Rightarrow$

\* E.g  $\Rightarrow$

i) Features  $\Rightarrow$  IQ, Class, CGPA

i) Features  $\Rightarrow$  Alcohol, fruit, origin

Target  $\Rightarrow$  Package

Target  $\Rightarrow$  wine\_class

ii) Features  $\Rightarrow$  height, matches, wins, baskets

ii) Features  $\Rightarrow$  height, matches, wins, baskets, points

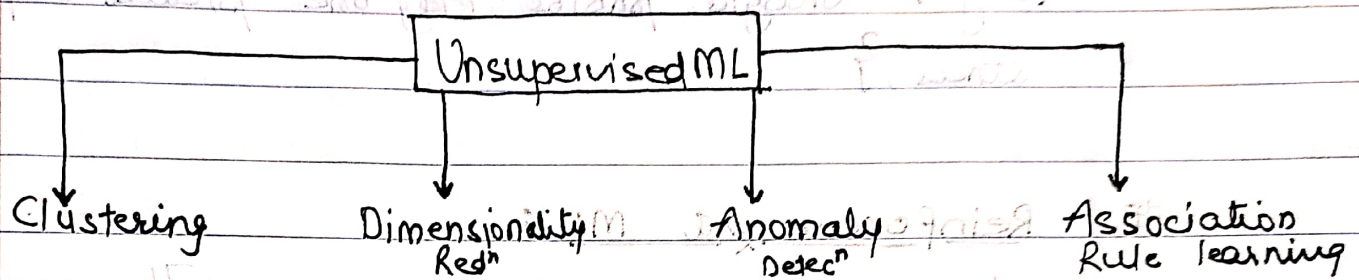
Target  $\Rightarrow$  Points-scored

Target  $\Rightarrow$  Group-level



## # Unsupervised ML

When you have only features, you have to decide what you want to do with data.



### i) Clustering:

We use it to create groups of our data. (E.g - KNN)

### ii) Dimensionality Redn:

When we have very high no. of features / dimensions, then we use dimensionality redn method to remove / reduce / combine columns such that we can reduce dimensions, hence increasing speed and getting better results. E.g PCA (Principal Component Analysis)

### iii) Anomaly Detection:

We identify anomalies in the data. We can train our model on expected results / inputs and identify if sth goes wrong. (E.g → fraud, stock price etc.)

### iv) Association Rule Learning:

We use data to identify association between two or more items. (E.g → Apriori, frequent Pattern)



## # Semi-supervised ML :

Labelling is a costly process. Hence, This method

allows us to combine labels for similar data.

{E.g → Google photos (tag one picture & find all others)}

## # Reinforcement ML :

No ~~target~~ data is provided. The agent (ML model) is free to explore and learn from experience.

If correct decision is made reward else punishment is given. {E.g → Self driving car, chess bot}