Machine Learning (ML)

A process in which machine learns from data (inputs and past experience) and from this predict the next set of outcomes is called MAchine learning.

Traffic Signal Example:

Red = data
Yellow=Learning predicitions
Green = Decisions

Data Driven = Training
Decision Making = Prediction

Naan tiki ki misaal (10 wala maal 9 me bechne me sochta raha .. gaahak chala gyaa) it show data driven decision making poor thi.\

1. *Data Driven*
   - Data should be moderate. Not too excess not to less and clean also.
   - Data can be trained to develop a model and model can then be used for prediction *(Decision Making)*.

Types of Machine Learning

Supervised

- works under supervision

- Teacher teaches

- Prediction and then outcome

  80-20 Rule:

  - Teach with 80 percent data. Check whether it learnt by testing with 20 percent data.
    - (Woh bachay ko mehmano k samne baba bulwana is testing)
  - then unknown inputs p output predict karo.

Types of Supervised Learning

Classification

- For categories based

Regression

- For numeric data

Unsupervised Learning

- No supervision = no testing
- No teacher = **NO ip exist**
- No labelling of data
- It finds pattern by itself

Example: Like 100 bache dedeye 10 aur 5 class k mix. Ab apne Q/As banae according to class 10. Those who will answer will be assigned cluster of class 10. Those who will not go to cluster of class 5. and nallay bech k will go to third cluster.
There input was absent. You just did clustering.

Semi Supervised

- Mixture of 1 and 2. (Some labelled and unlabelled data)
- Some data is labelled most is not.

Thora data supervised wala thora clustering wala (without ip and label) *Mostly data is with Missing Value*

Reinforcement Learning

- Hit and Trial
- Learn from Mistakes
- Reward and Punishment rule
- Prediction based on Reward and Punishment.

Input data dia (but it is not a training data)
Model will learn itself (like footballer knows foul par red card mil jana, use batana nahe parta)
Example: First ane par gift milta hay tu ap automatically train hojate ho k mjhe parhna hay ab se
Matlab supervised me sutta pene par warning Reinforcement me sutta piya tu direct pitay tu next time saza par learn kia. ***((Feedback))***