ENJOY MACHINE LEARINIG

A BASIC APPROCH - PART-1

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1. A basic steps to Enjoy coding in Python

1) Imperative:

- Understand the Problem & find its logic by framing algorithms or flowcharts.

2) Functional:

- Frame/design the needed logic using controlled statements, loops etc & check its output.

3) Procedural:

- Put the checked logics inside the Function and then check its flow/order.

4) Object Oriented:

- Put the checked functions inside the Class & check the overall flow of the code optimization.

2. Getting started with Machine Learning (ML)

- ML is the ability of the computer to learn without programming/human assistance.
- Automating the learning process based on the experience of the machine.
- Process of training a piece of software called as a model/ a hypothesis/ an Algorithm.

2.1. Steps of Machine Learning:

2.1.1. Model Creation/Learning Phase:

1. Data Collection
2. Data Pre-processing
3. Input, output split
4. Split the Train & Test
    a. Train set
        i. Model creation
    b. Test set
        i. Evaluation metrics
5. Save the Best Model

2.2.2. Deployment Phase:

- Load the saved model
- Get input
- Predict
- Call to Action

3.1. Types of Machine Learning:

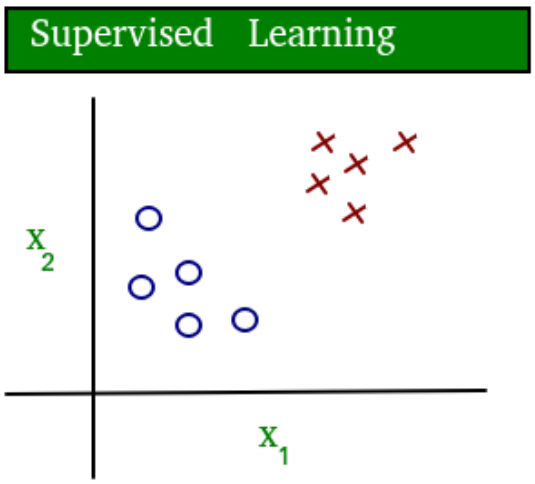
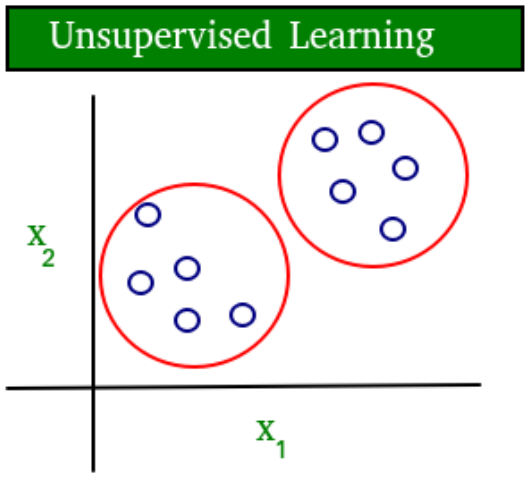
3.1.1. On basis of the *Nature of learning*:

- Supervised Learning
  - Regression
  - Classification
    - i. Binary

      (Yes/No) type
    - i. Multiclass

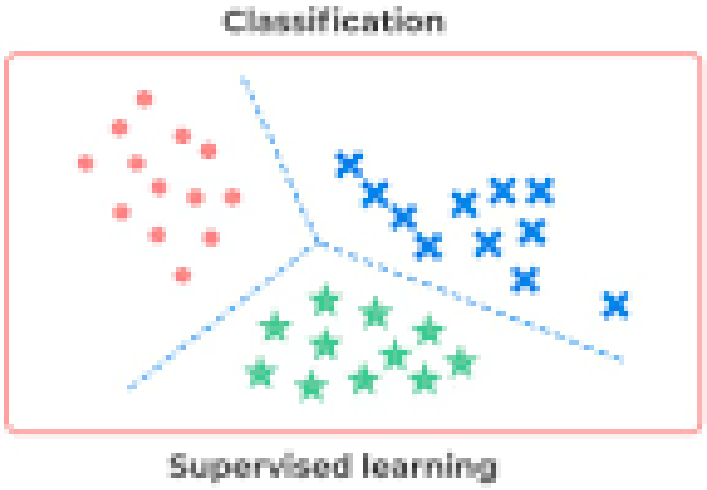
      More categories
- Unsupervised Learning
  - Clustering
  - Hierarchial
- Semi-supervised Learning
- Reinforcement Learning

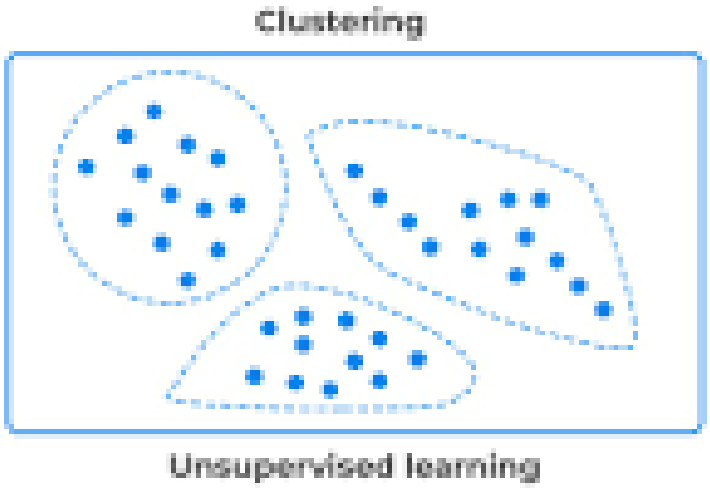
3.2. Types of Machine Learning:

Supervised Learning	Unsupervised Learning
Both input (label/ independent variable/ feature vectors) & output (Target label/ dependent variable) data will be provided	Only input (label/ independent variable/ feature vectors) will be provided
Both input,output data and the requirement / goal will be clear	Only input data will be clear
Connects/ Map input and the output data	Groups/ Cluster the output data
	

3.2. Types of Machine Learning:

Supervised Learning	Unsupervised Learning
Some Algorithms are: • Linear Reg • Ada boost • XG boost • Logistic Reg • SVM • Random Forest • Decision tree • Naives Bayes • Ridge, Lasso reg	Some Algorithms are: • K-Means Clustering • Agglomerative • Affinity Propagation • Mean Shift • OPTICS • Birch • DBSCAN • HDBSCAN • Spectral clustering
Example: Fraud detection, Image & speech recognition	Example: Super market wants to increase its revenue





3.2. Types of Supervised Learning:

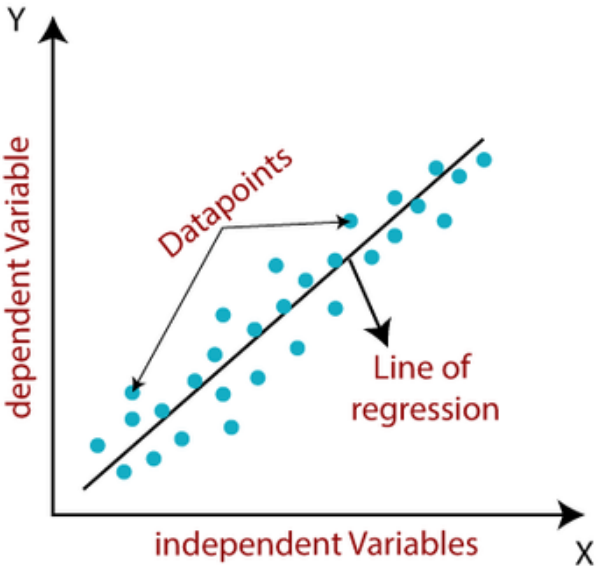
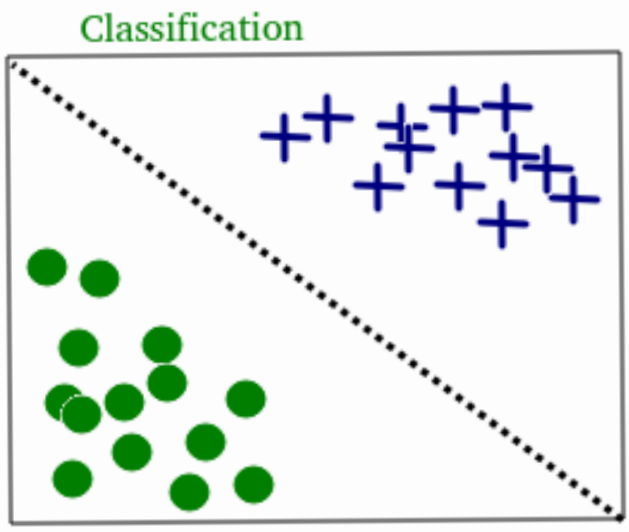
Semi-Supervised Learning:

- In the given input data, only some data is named/labeled.
- Example: In image data, only some input image is named/labeled, (cat, dog, person) majority were unnamed/unlabeled.

Reinforcement Learning:

- Here computer program is programmed in different environment hence machine need to achieve the assigned goal.
- Computer program is provided feedback in terms of rewards (positive) & punishments (negative) according to its perfomance towards the assigned goals in the problem space (environment).
- Example: Auto driving mode in vehicles, In games, computer play as oponent.

3.3. Types of Supervised Learning:

Regression	Classification
Both input and output data will be in (Numbers) Numerical format	Both input and output data will be in (words) Categorical format
Outputs will be continous rather than discrete	Outputs will be binary (Yes/No) type or with more categories
Example: Stock price Prediction	Example: Spam/ Not spam Prediction
	

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