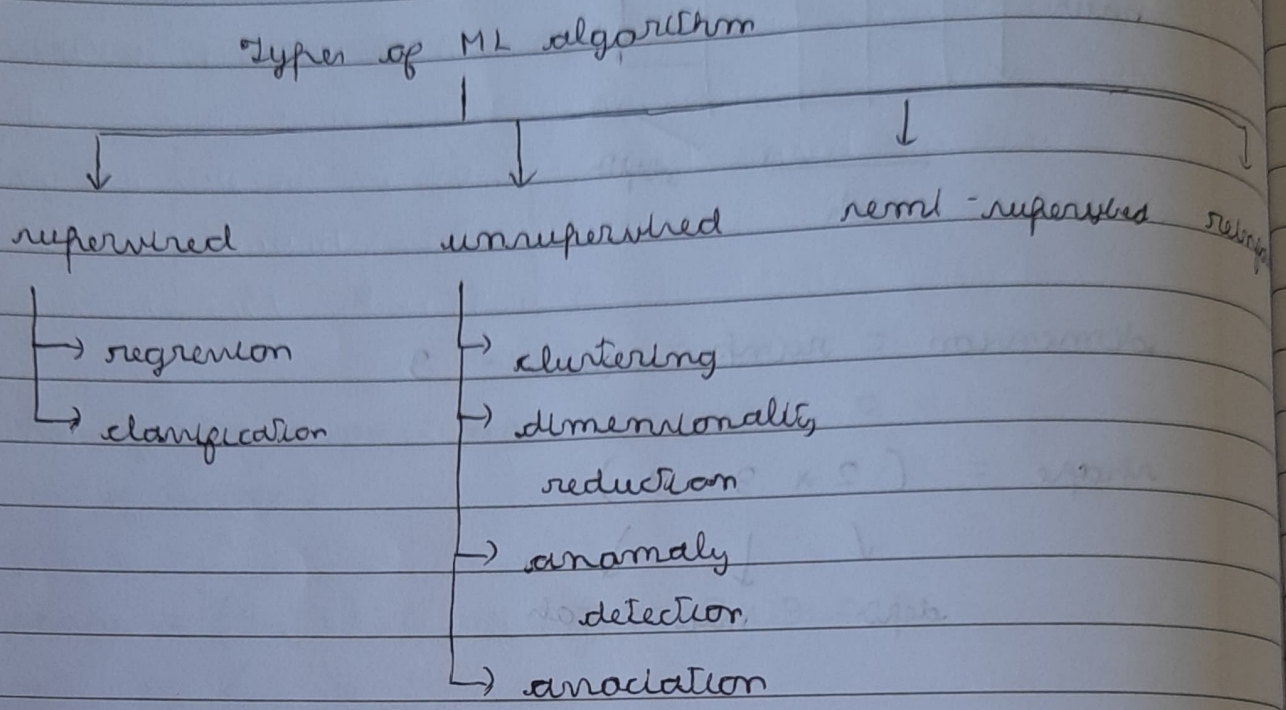
Types of ML

Based on supervision



1. Supervised -

In supervised learning, we feed labelled data (input & output columns) into the model. The model finds a suitable mapping function from the data. Then if we provide a new unlabelled input, so the model will be able to predict the output from the mapping function.

- Regression - when the output column is numeric or continuous
  eg:- Linear Regression, Ridge Regression, Random forest

- Classification - when the output column is categorical
  eg:- Logistic Regression, SVM, KNN, Naive Bayes

2. Unsupervised -

In unsupervised learning, we feed unlabelled data (only input) to the model. The model finds similarity among the input data samples and groups them into categories.

- Clustering (unsupervised classification) - The model groups ~~similar~~ data samples into categories.
  eg :- K means

- Dimensionality reduction - This algorithm reduces the number of attributes in a dataset to help in analysing data.
  eg :- PCA

- Anomaly detection - It helps to detect outliers (anomalies) in the data.

- Association - It helps to discover association rule such as people that buy X also tend to buy Y.

3. Semi - supervised -

It is partially supervised and partially unsupervised. Here some of the input data is labelled and some are unlabelled.

4. Reinforcement -

Here the ML algorithm acts as a virtual agent in the environment. The agent selects the best action from the possible set of actions and based on that selection receives reward / penalty. The aim is to maximize reward and reduce penalty and eventually learning.