Machine Learning Techniques
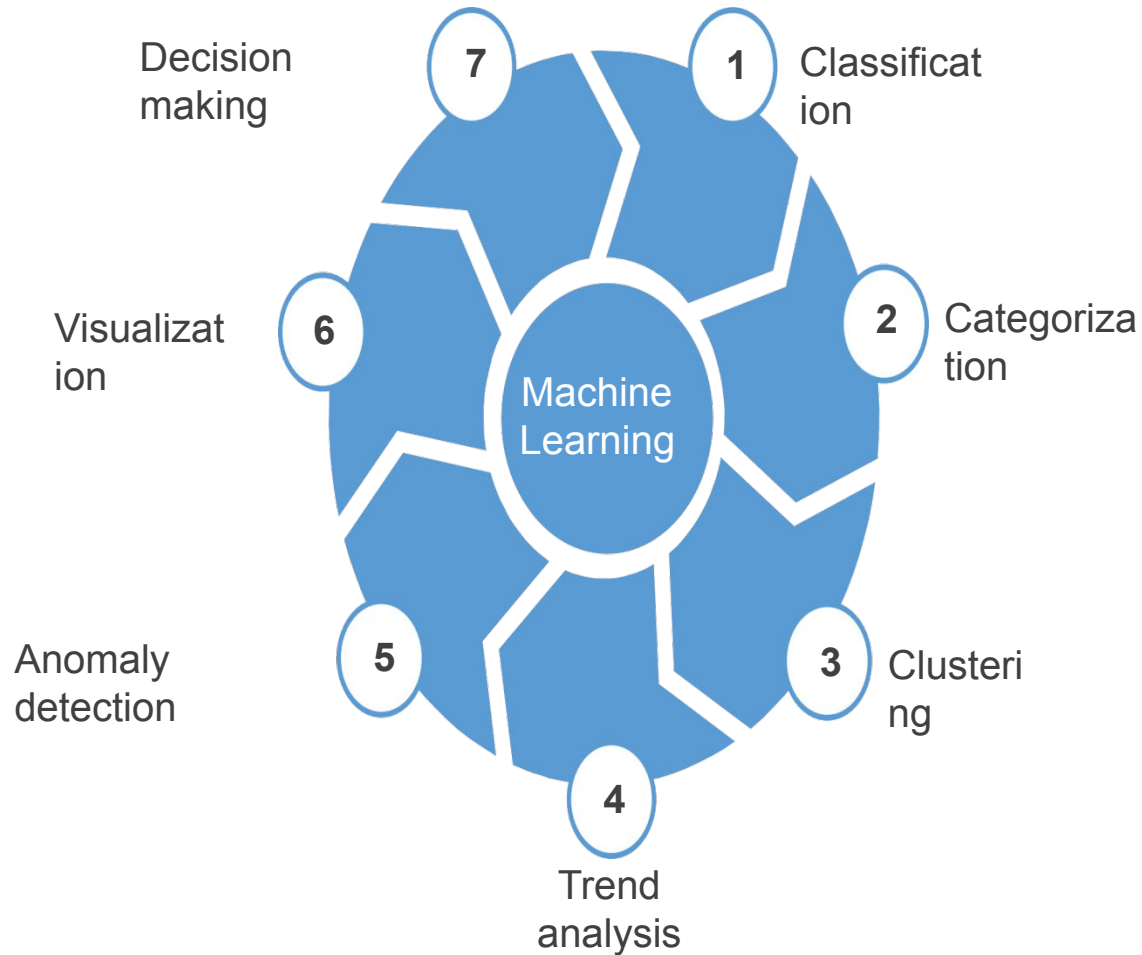
Machine Learning uses a number of theories and techniques

Machine Learning Techniques

- **Classification** is a technique in which the computer program learns from the data input given to it and then uses this learning to classify new observation

- **Categorisation**- A technique of organizing data into categories for its most effective and efficient use.

- **Clustering** Technique of grouping a set of objects in such a way that objects in the same group are more similar to each other than to those in other groups

- **Anomaly detection** is a technique to identify cases that are unusual within data that is seemingly homogeneous

- **Trend Analysis** is a technique aimed at projecting both current and future movement of events through use of time series

- **Data analysis** Technique to present data in a pictorial or
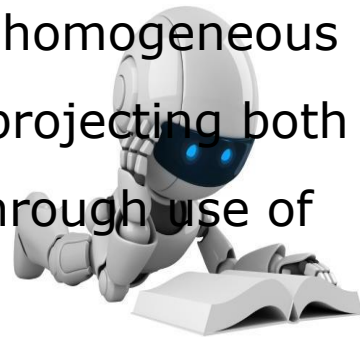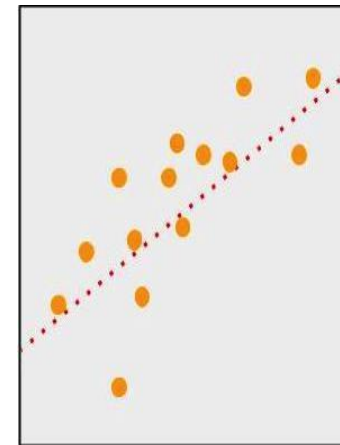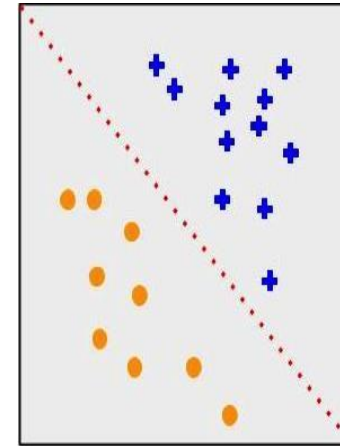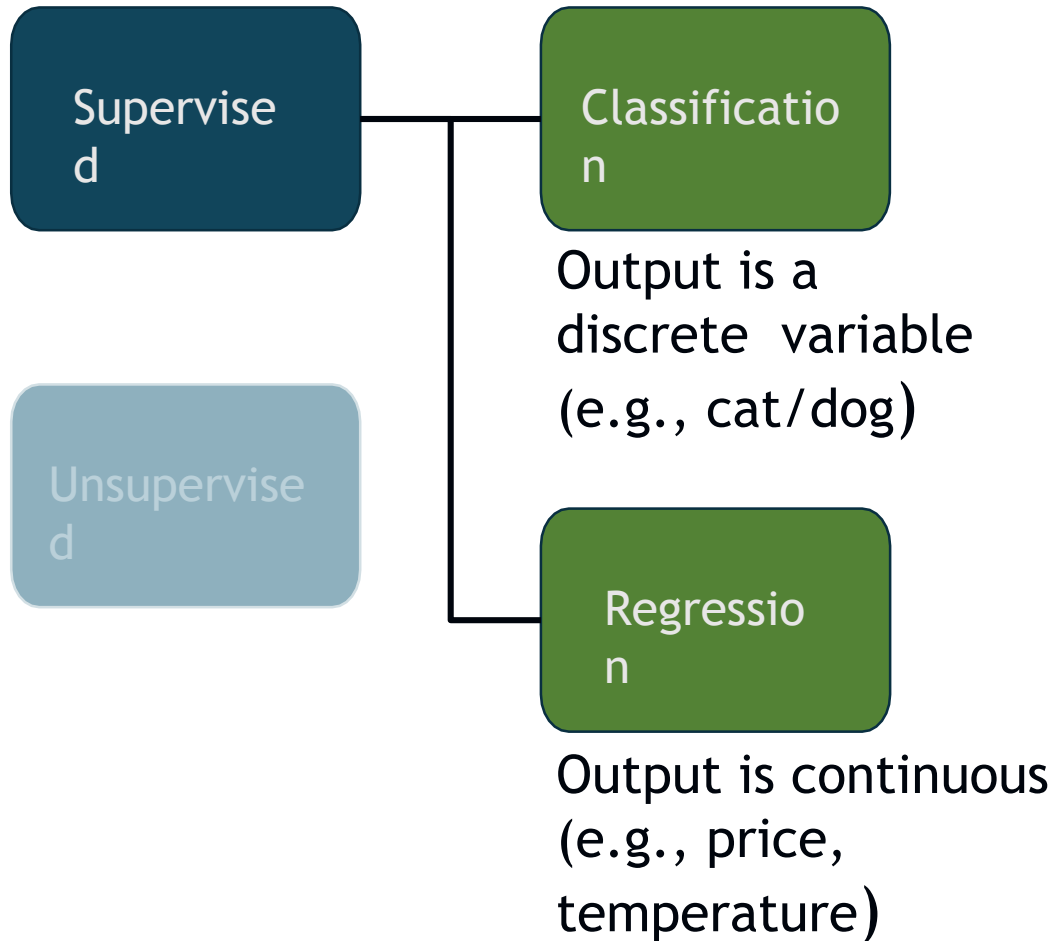
Supervised Learning

Supervised

Unsupervised

- Is this a cat or a dog?

- Are these emails spam or not?

- Predict the market value of houses, given the square meters, number of rooms, neighbourhood, etc.

Supervised Learning is a type of machine learning used to train models from labelled training data. It allows you to predict output for future or unseen data.

Supervised Learning- Examples

Supervised

Unsupervised

Classification

Output is a discrete variable (e.g., cat/dog)

Regression

Output is continuous (e.g., price, temperature)

Unsupervised Learning

Supervised

Unsupervised

There is no desired output. Learn something about the data. Latent relationships.

I have photos and want to put them in 20 groups.

I want to find anomalies in the credit card usage patterns of my customers.
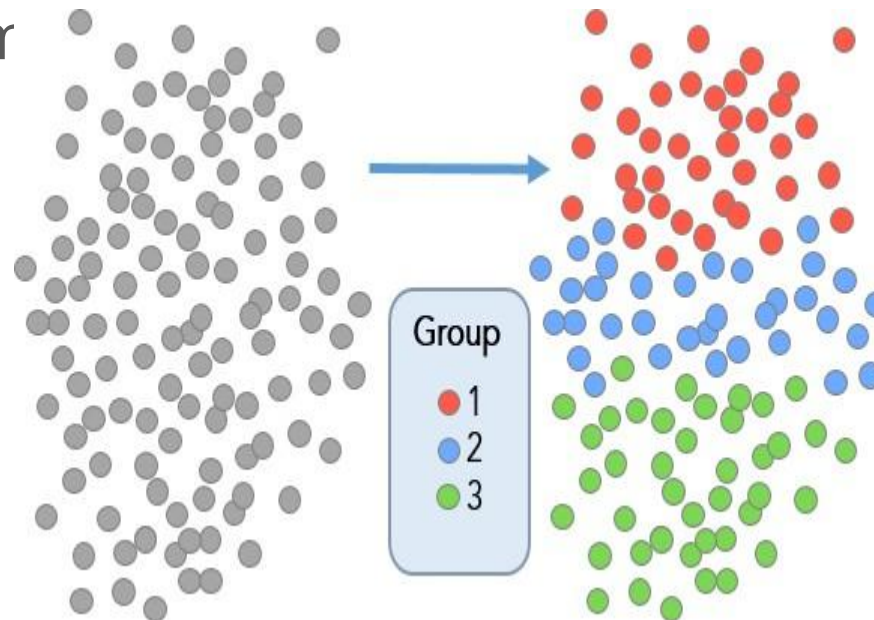
Unsupervised learning is a type of machine learning algorithm used to draw inferences from datasets consisting of input data without labelled responses. The most common unsupervised learning method is cluster analysis, which is used for data analysis to find hidden patterns or grouping in data.
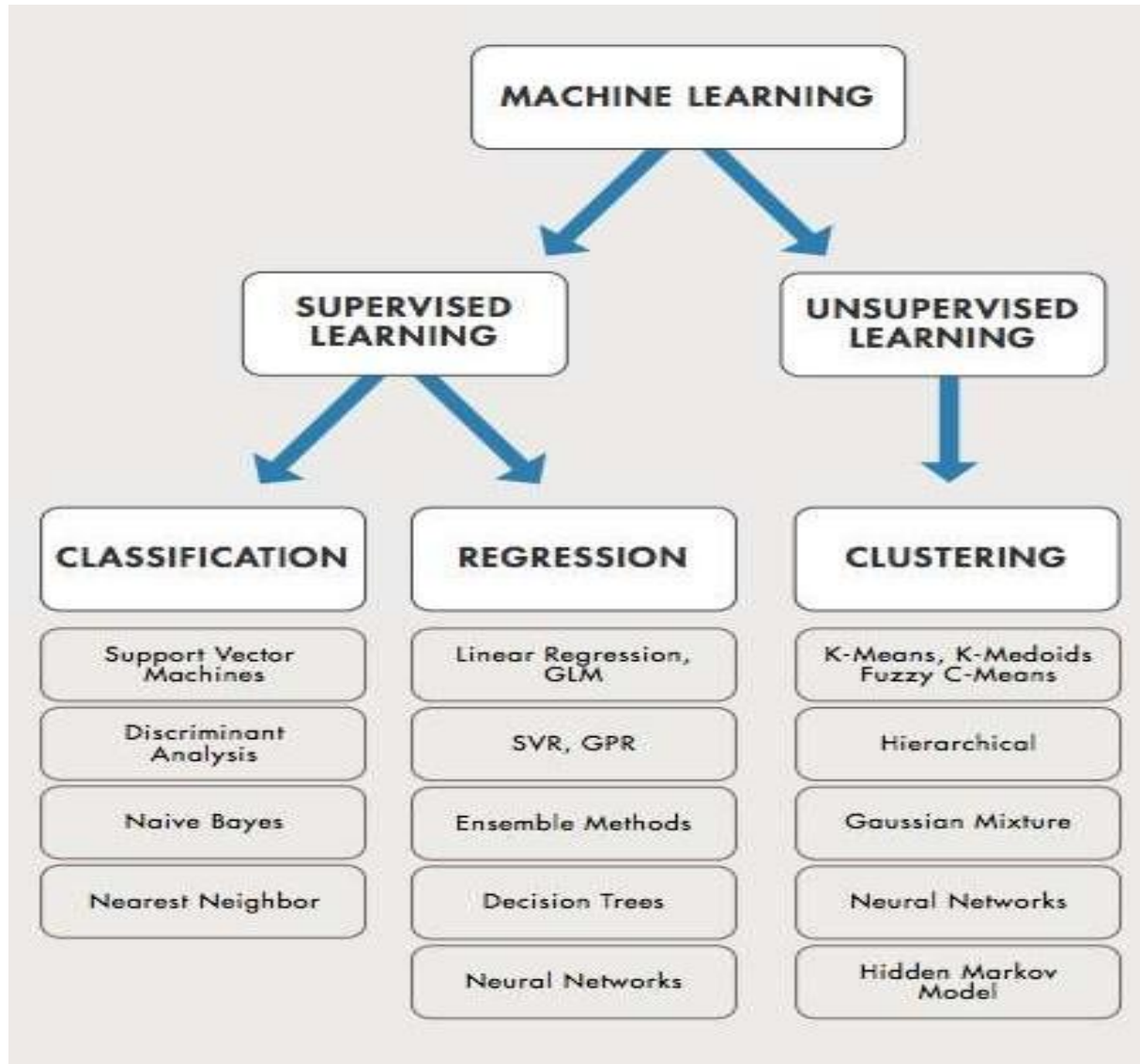
Unsupervised Learning- More

Supervised

Unsupervised

Useful for learning structure in the data (clustering), hidden correlations, reduce dim

Summary

Q.1 Describe Machine Learning Techniques ?

Q.2 What is the difference between classifications & regressions?

Q.3 What is the difference between classifications & clustering?

Q.4 What is the difference between supervised & unsupervised learnings?

Q.5 Compare the cases when supervised & unsupervised learnings are used?