**WEEK 1**

**1.What is ML?**

Machine Learning (ML) is a subfield of artificial intelligence (AI) and computer science that focuses on designing algorithms and statistical models that enable computers to "learn" from and make predictions or decisions based on data, rather than following strictly programmed instructions.

**2. What is supervised machine learning algorithm?**

A Supervised Machine Learning (ML) algorithm is a type of machine learning technique that uses labeled data to train a model. In supervised learning, each training example consists of an input and a corresponding correct output (label), and the algorithm learns to map inputs to outputs. The goal is for the model to make accurate predictions or classifications when it encounters new, unseen data.

There are two main types of supervised learning tasks: classification, where the output is a category (like spam or not spam), and regression, where the output is a continuous value (like predicting house prices).

**3. What is regression and classification**

**Regression:**

Regression is used when the output variable is a continuous numeric value. The model learns to predict a quantity based on the input features. For example, predicting the price of a house based on its size and location, or forecasting temperature, are regression problems. The output can be any real number, such as 45.6 or 102.3.

Common algorithms: Linear Regression, Decision Tree Regression, Support Vector Regression (SVR)

**Classification:**

Classification is used when the output variable is a discrete label or category. The model learns to assign input data into predefined classes. For example, determining if an email is "spam" or "not spam", or classifying handwritten digits (0–9), are classification problems.

Common algorithms: Logistic Regression, Decision Trees, Random Forest, K-Nearest Neighbours, Support Vector Machines (SVM)