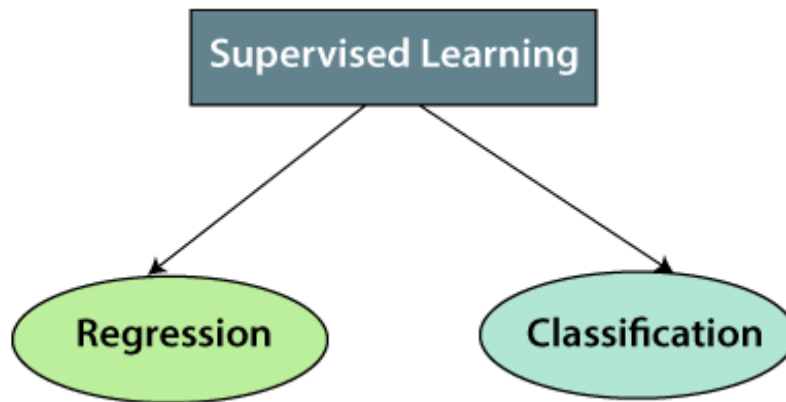# Types of supervised Machine learning Algorithms:

Supervised learning can be further divided into two types of problems:

1. Regression:

Regression algorithms are used if there is a relationship between the input variable and the output variable. It is used for the prediction of **continuous variables**, such as Weather forecasting, Market Trends, etc. Below are some popular Regression algorithms which come under supervised learning:

- o   Linear Regression
- o   Regression Trees
- o   Non-Linear Regression
- o   Support Vector Machines (use in both)
- o   Multivariate Regression algorithm
- o   Multiple Regression Algorithm
- o   Bayesian Linear Regression
- o   Polynomial Regression
- o   Ridge regression
- o   Logistic Regression (use in both)
- o   Lasso *(Least Absolute Shrinkage Selector Operator)* Regression

Continuous variable:

Continuous variables are numeric variables that have an infinite number of values between any two values. A continuous variable can be numeric or date/time. For example, the length of a part or the date and time a payment is received.

2. Classification:

Classification algorithms are used when the output variable is **categorical**, which means there are two classes such as Yes-No, Male-Female, True-false, etc. Spam Filtering,

- o Random Forest
- o Decision Trees
- o Support vector Machines (use in both)
- o Naïve Bayes
- o Stochastic Gradient Descent

- o K-Nearest Neighbours

Categorical variable

> Categorical variables contain a finite number of categories or distinct groups. Categorical data might not have a logical order. For example, categorical predictors include gender, material type, and payment method.

Advantages of Supervised learning:

- o With the help of supervised learning, the model can predict the output on the basis of prior experiences.

- o In supervised learning, we can have an exact idea about the classes of objects.

- o Supervised learning model helps us to solve various real-world problems such as **fraud detection, spam filtering**, etc.

Disadvantages of supervised learning:

- o Supervised learning models are not suitable for handling the complex tasks.

- o Supervised learning cannot predict the correct output if the test data is different from the training dataset.

- o Training required lots of computation times.

- o In supervised learning, we need enough knowledge about the classes of object.