**Goal of AI**: Create systems that can function intelligently & independently

**Speech Recognition**: Is statically learning

**Symbolic way of learning:** Computer vision

Programming languages for Machine Learning : Python, R

**Training Data Set** : Used to train the model for performing various actions

**Test Data Set :**

**Machine Learning :**  Field of study that gives computers the ability to learn without being explicitly programmed.

**Supervised Learning** : The input data is labeled and has a known result. Use both input (X) variable and out put variable (Y) to derive the mapping function Y=f(X). The goal is to approximate the mapping function so well that when you have new input data, it can predict the output from the date. Example problems are classification and regression. Example algorithms include **Logistic Regression** and the **Back Propagation Neural Network.**

1. **Classification :** The output of the prediction is a definite value such as true or false. A classification model attempts to draw conclusion based on the observed values.

**Examples of Classification Problems**

• text categorization (e.g., spam filtering)

• fraud detection

• optical character recognition

• machine vision (e.g., face detection)

• natural-language processing

(e.g., spoken language understanding)

• market segmentation

(e.g.: predict if customer will respond to promotion)

• bioinformatics

(e.g., classify proteins according to their function)

1. **Regression** : The output of the prediction will be a continuous value such as height or weight.

**Unsupervised Learning** : Input data is not labeled and does not have a known result. A model is prepared by deducing the structures present in the input data. Example problems are clustering, dimensionality reduction and association rule learning. Example algorithms include: the Apriori algorithm and k-Means

1. Clustering
2. dimensionality reduction
3. association rule learning