PRIOR KNOWLEDGE

MACHINE LEARNING

Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behavior. Artificial intelligence systems are used to perform complex tasks in a way that is similar to how humans solve problems. Machine Learning is a science of making computers learn and act like humans by feeding data and information without being explicitly programmed.

TYPES OF MACHINE LEARNING

- Supervised learning
- Unsupervised learning

SUPERVISED LEARNING

Supervised learning, also known as supervised machine learning, is a subcategory of machine learning and artificial intelligence. It is defined by its use of labeled datasets to train algorithms that to classify data or predict outcomes accurately. In Supervised learning a model is able to predict with the help of labeled dataset. The Supervised learning is basically two types, they are;

Classification: When the output variable is categorial.i.e.with two or more classes, we make use of classification.

Eg: Spam mails

Regression: Relationship between two or more variables where a change in one variable is associated with a change in other variable.

Eg: Weather predictions

APPLICATIONS OF SUPERVISED LEARNING

- Risk Assessment
- Image Classification
- Fraud Classification

UNSUPERVISED LEARNING

In Unsupervised learning, the algorithm is trained using data that is unlabelled. The most commonly used Unsupervised learning algorithms are k means clustering, hierarchical clustering, apriori algorithm. They are divided into two types;

Clustering: The method of dividing the objects into clusters which are similar between them and are disimilar to the objects belonging to other clusters.

Association: Discovering the probability of the co-occurence of items in a collection**.**

APPLICATIONS OF UNSUPERVISED LEARNING

- Market Basket Analysis
- Semantic Clustering
- Delivery Store Optimization
- Identifying Accident Prone Areas

COMMON ML PROBLEMS

- Classification
- Regression
- Clustering

Classification Problem

-predict category of new observation

- ✓ Medical diagnosis Eg: Sick and Not Sick
- ✓ Animal recognition Eg: Dog, Cat and Horse

Regression

-predictors gives response with the help of regression function

-fitting a linear function

the applications of regression are;

- ✓ Quantitative output
- ✓ Previous input-output observations

Clustering

-grouping objects in clusters

-similar within cluster and disimilar between clusters

Eg

- ✓ Grouping similar animal photos
  - No labels
  - No right or wrong