Introduction to Machine Learning

Artificial Intelligence

Artificial Intelligence(AI) can be defined as the machine that can be trained with large amount of data, and can perform tasks like humans in predicting, responding, decision making etc., without any human intervention.Few Applications of AI are :

Alexa voice Assistant

Face Detection

Spam Detection

Product Recommendations

HealthCare Diagnosis

Fraud Detection

Branches of AI

Machine Learning

Deep Learning

Robotics

Natural Language Processing(NLP)

Expert Systems

Computer Vision

ML Definition

Machine Learning(ML) can be defined as the subset of AI which uses the different algorithms and analyze the data to make predictions or forecasting the data. Different types of ML Techniques are :

Supervised Learning

Unsupervised Learning

Reinforcement Learning

Supervised Learning

In supervised machine learning the predictions are made based on the trained data. Which means from a dataset let us assume 70 % of data with input columns and result column is trained. Based on the trained data the predictions are made on the test data.

Algorithms that are performed under supervised machine learning are Linear, Logistic, KNN(K-Nearest Neighbor), Naive Bayes, SVM(Super Vector Machine), Decision Tree, Random Forest, Gradient Boosting, XG Boosting, Ada Boost.

Applications to perform Supervised Learning are whether a employee can be promoted based in their performance, Will it rain in june month of this year, patient diagnosed with a health condition..

Unsupervised Learning

In unsupervised Machine Learning, algorithms are used to analyze and cluster unlabeled datasets to find hidden patterns or data grouping. Unlike supervised learning, in unsupervised learning only input data is given and using algorithms hidden patterns are discovered.

Algorithms that are performed in unsupervised machine learning are Hierarchical clustering, K Means clustering, DBScan(Density Based Spatial Clustering of Applications with Noise), PCA(Principal Component Analysis).

Applications of unsupervised learning are object recognition, Anomaly detection and Recommendations Engines.

Reinforcement

Reinforcement Learning in Machine Learning trains software to make right decisions to achieve the right optimal results. The entity takes action and learn through trial and error method. And the machine learns from its past experiences.

Algorithms used in reinforcement machine learning are policy gradient, actor critic, Q Learning.

Applications of reinforcement machine learning are text summarization, question answering, machine translation.

Predictions using supervised learning

To implement machine learning model first we have to collect the data, EDA(Exploratory Data Analysis) should be performed to clean the data as categorical values are not accepted as input values or independent values by machine learning models. Later feature selection plays a key role.

Then we can split the data into train data and test data. Then we can train the model by fitting the train data to the algorithm, which is followed by model hyper parameter tuning. Then the test data is used to check how the model is performing. Later the inputs from the test data can be given to find or predict the result.

Thank You