

Overview of ML

Define ML in your own words

Machine Learning is a subset of artificial intelligence in which we train the machine using the previous datasets which can help to find the pattern, predict the value, and analyze the data.

In a paragraph, summarize the importance of data, pattern recognition, and accuracy in machine learning

The importance of data in Machine learning is to train the model. With the help of previous data, we can automate the process by teaching machines and making the prediction, and classification. Pattern recognition is important in machine learning to learn things by recognizing different regularities in data so that we can classify similar datasets. For example, we can classify whether someone has good credit risk, clustering the IoT devices which release similar data. Accuracy is very important in machine learning to make better decisions by machine. When we fed a model with different datasets, accuracy is very important in modeling to make good predictions and classification so that we can get a better result.

Describe the relationship between AI and ML

Machine learning is a subset of artificial intelligence, whereas Artificial intelligence enables a machine to think like a human being which is to learn and problems solving. With AI, the computer uses math and logic to imitate humans. Machine learning is an application of AI, in which we use different mathematical models of data to help machines learn on their own. With this, a machine

learns continuously and improves based on its experience. Thus, AI is a broad concept whereas ML is a part of AI.

list at least 2 examples of modern machine learning applications, and explain why these an application could not be built with traditional programming

Two examples of machine learning applications are speech recognition and image processing. These two examples could not be done with traditional programming. This is because in traditional algorithms all knowledge is coded in an algorithm that is we need to know every knowledge before we code. But these two examples are not known beforehand because each object and speech is different. For this machine learning is used in which we train the model by injecting large data sets. With previous datasets and similarities based on it, ML predicts the speech and object using image processing. Also, traditional programming doesn't work when there is a huge amount of data, since both examples have a tremendous amount of data. In image processing to classify an object, we don't have any possibility to encode rules because for each and every object there are different rules.

In a paragraph, define the terms observation, feature, quantitative data, and qualitative data and discuss their importance in machine learning

Observations are each row in a sample data point. Each row is injected into a machine learning algorithm to know its pattern, classify it, or predict it. Each column in a table is a feature. It is important in machine learning because it is a predictor through which data is collected based on it and later on predicted or classified. Quantitative data is a numeric feature. It is important because we can operate statistical operations in it to discover patterns. Through this, we can use it to make

predictions and find averages, means, and effects. Qualitative data is a feature that can take on one of a finite set of values. It is important in machine learning because it focuses on the qualities which can drive the number. It is also descriptive and subjective research. Also, it can be analyzed by grouping the data.

Write a paragraph describing your personal interest in ML and whether/how you would like to learn more about ML for personal projects and/or professional application

During my last internship, I got an opportunity to work in a machine learning team. This team was working to cluster IoT devices using a spectral clustering algorithm. With this, they want to automate the service which has similar patterns and cluster them into one to have network stability and energy reduction. This project helped me to learn more about machine learning. I researched machine learning, mainly unsupervised learning and during that time I did my own personal project like image recognition, K-means clustering, prediction of credit card fraud, etc.