Name :- Adarsh Ravindra Marakwar

Explain Machine Learning with your own example?

Ans :-

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it to learn for themselves.

The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

But, using the classic algorithms of machine learning, text is considered as a sequence of keywords; instead, an approach based on semantic analysis mimics the human ability to understand the meaning of a text.

Examples

Image Recognition

Image recognition is one of the most common uses of machine learning. There are many situations where you can classify the object as a digital image. For example, in the case of a black and white image, the intensity of each pixel is served as one of the measurements. In colored images, each pixel provides 3 measurements of intensities in three different colors – red, green and blue (RGB).

Machine learning can be used for face detection in an image as well. There is a separate category for each person in a database of several people. Machine learning is also used for character recognition to discern handwritten as well as printed letters. We can segment a piece of writing into smaller images, each containing a single character.

Speech Recognition

Speech recognition is the translation of spoken words into the text. It is also known as computer speech recognition or automatic speech recognition. Here, a software application can recognize the words spoken in an audio clip or file, and then subsequently convert the audio into a text file. The measurement in this application can be a set of numbers that represent the speech signal. We can also segment the speech signal by intensities in different time-frequency

bands.

Speech recognition is used in the applications like voice user interface, voice searches and more. Voice user interfaces include voice dialing, call routing, and appliance control. It can also be used a simple data entry and the preparation of structured documents.

Medical diagnosis

Machine learning can be used in the techniques and tools that can help in the diagnosis of diseases. It is used for the analysis of the clinical parameters and their combination for the prognosis example prediction of disease progression for the extraction of medical knowledge for the outcome research, for therapy planning and patient monitoring. These are the successful implementations of the machine learning methods. It can help in the integration of computer-based systems in the healthcare sector.

Statistical Arbitrage

In finance, arbitrage refers to the automated trading strategies that are of a short-term and involve a large number of securities. In these strategies, the user focuses on implementing the trading algorithm for a set of securities on the basis of quantities like historical correlations and the general economic variables. Machine learning methods are applied to obtain an index arbitrage strategy. We apply linear regression and the Support Vector Machine to the prices of a stream of stocks.

Learning associations

Learning associations is the process of developing insights into the various associations between the products. A good example is how the unrelated products can be associated with one another. One of the applications of machine learning is studying the associations between the products that people buy. If a person buys a product, he will be shown similar products because there is a relation between the two products. When any new products are launched in the market, they are associated with the old ones to increase their sales.

Classification

A classification is a process of placing each individual under study in many classes. Classification helps to analyze the measurements of an object to identify the category to which

that object belongs. To establish an efficient relation, analysts use data. For example, before a bank decides to distribute loans, it assesses the customers on their ability to pay loans. By considering the factors like customer's earnings, savings, and financial history, we can do it. This information is taken from the past data on the loan.

Prediction

Machine learning can also be used in the prediction systems. Considering the loan example, to compute the probability of a fault, the system will need to classify the available data in groups. It is defined by a set of rules prescribed by the analysts. Once the classification is done, we can calculate the probability of the fault. These computations can compute across all the sectors for varied purposes. Making predictions is one of the best machine learning applications.

Extraction

Extraction of information is one of the best applications of machine learning. It is the process of extracting structured information from the unstructured data. For example, the web pages, articles, blogs, business reports, and emails. The relational database maintains the output produced by the information extraction. The process of extraction takes a set of documents as input and outputs the structured data.

Regression

We can also implement machine learning in the regression as well. In regression, we can use the principle of machine learning to optimize the parameters. It can also be used to decrease the approximation error and calculate the closest possible outcome. We can also use the machine learning for the function optimization. We can also choose to alter the inputs in order to get the closest possible outcome.

Financial Services

Machine learning has a lot of potential in the financial and banking sector. It is the driving force behind the popularity of the financial services. Machine learning can help the banks, financial institutions to make smarter decisions. Machine learning can help the financial services to spot an account closure before it occurs. It can also track the spending pattern of the customers. Machine learning can also perform the market analysis. Smart machines can be trained to track the spending patterns. The algorithms can identify the tends easily and can react in real time.