

What is a machine learning model? A model in the entire machine learning or data science environment that is used to generate predictions. Machine learning is also called predictive model. Machine Learning Model is a mathematical function. It demands a numerical input. The general mathematical function is $y = f(x)$ this is the predictive modeling. The value of y changes as x changes. The data will be replaced, this is the foundation of building a machine learning model. An example to generate predictions for machine learning model is having these features called ram, mobile camera, ROM. There is a requirement for the iphone 12, samsung a70, iphone 13, iphone 11, Sony Xperia, Nokia LUMIA, etc. The upsell is the actual. The upsell prediction was that the upsell would be successful for all the phones. The percentage or score of upselling was 6/11 or 54%. The success rate is 54% or the change is 54%. The upsell is (y) .

Machine Learning Systems- Supervised, Unsupervised, and Reinforcement

Machine Learning is divided into two parts which is supervised and unsupervised. Supervised already knows its target. The target is the final output you are trying to predict, this is also known as (y) like in the previous paragraph to where the upsell is (y) . Unsupervised is not knowing the target. An example of showing Unsupervised is at Amazon, when they don't know the target. Therefore, they make analysis based off of a group of data or cluster. They get something showing a number or the ratings is 4.5/5. An Association is also an Unsupervised. Supervised has Classification. Classification is like seeing cancer prediction. This will show a result of yes or no. Regression is also Supervised. Regression is like showing salary prediction. It's a continuous data. An example, is the house price prediction. Reinforcement is not supervised or unsupervised. Reinforcement is the agent getting the reward or appreciation on success but will fail if they don't receive the reward. This is an example done in gaming.

Data Accumulation Strategies and Resources

Artificial intelligence is the simulation of human intelligence process that is done by machines, especially computer systems.

EDA

EDA also known as Exploratory Data Analysis checks the quality of data. It brings out insights on this. This is statistical measures. There are various types of charts like bar charts and pie charts.

An example is a bar chart with the title called, Flavor Preferences by Gender. On this bar chart, it showed the flavor chocolate was liked more by females rather than males. With the flavor strawberry, it was more favorable among males than females. Males demanded more vanilla flavors than females.

Data Preprocessing & Feature Engineering

Data preprocessing is getting any type of data. Data processing is divided into two parts which is Data Cleaning and Feature Encoding. Data Cleaning is there could be a consistency of missing value in the data. This can include spelling mistakes. It can be the wrong data type such as a person would transfer a string or str into an integer or int. In Feature Encoding, two types of data is present. This includes Numerical Feature, this includes int, float, or complex numbers. Categorical data is like shoe sizes such 1,2,3,4, and 5. These categorical data is an object type. Object types are like string data. These are the features, based on these features the data will be changed. An example is having features such as Designation, Skills, Years of Experience. There is salary_target, and salary_predict. Set of salary is used for machine learning model or making a prediction. Prediction would be based on new data points on what the salary will be. So you could tell the model that the Designation is D1, Skills 1, Years of Experience is 1 so therefore the salary is 10K, as an example.

If you have a set of features such as f1, f2, f3, and f4. This is used in order to observe the model performance. Combine two features which would result in coming up with a new feature. This new feature for example is called f10. When generating a new feature it is called Feature Engineering. Another example is if you have the total number of sales and the cost price or total. If you subtract the total sales from the total cost price, this can come up as negative or no profit. It can also show as positive or as a profit. This is also Feature Engineering.

Training of an ML Model

This is beginning with an existing data. Then analyzing the data to identify rather or not there are certain patterns. Then we would make a prediction.

Hyperparameter Tuning

Tuning or Hyperparameter Tuning is done after modeling. A mismatch will occur if needed to use Hyperparameter Tuning. We predict based on the data thats been given to us. An example is seeing if a person is cancerous or not. The outcome is yes or no or y or n. The information can include the patient id, height, and weight. Patient Id is 1. The height is 107cm. The weight is 65 kg. The previous statement is no or n. The other row can show Patient Id is 2. The height is 120 kg. The weight is 75 kg. The previous statement is yes or y. Some information is showing the

Patient Id as 110. The height as 90 cm. The weight as 72 kg. The previous statement is showing no or n. The model is saying yes. Our job is to minimize this error. We minimize this by using Hyperparameter Tuning this can be an example of some type of business problem.