

we know humans learn from their past experiences and machines follow instructions given by humans but what if humans can train the machines to learn from the past data and do what humans can do and much faster well that's called machine learning but it's a lot more than just learning it's also about understanding and reasoning so today we will learn about the basics of machine learning so that's paul he loves listening to new songs he either likes them or dislikes them paul decides this on the basis of the song's tempo genre intensity and the gender of voice for simplicity let's just use tempo and intensity for now so here tempo is on the x axis ranging from relaxed to fast whereas intensity is on the y axis ranging from light to soaring we see that paul likes the song with fast tempo and soaring intensity while he dislikes the song with relaxed tempo and light intensity so now we know paul's choices let's say paul listens to a new song let's name it as song a song a has fast tempo and a soaring intensity so it lies somewhere here looking at the data can you guess whether paul will like the song or not correct so paul likes this song by looking at paul's past choices we were able to classify the unknown song very easily right let's say now paul listens to a new song let's label it as song b so song b lies somewhere here with medium tempo and medium intensity neither relaxed nor fast neither light nor soaring now can you guess whether paul likes it or not not able to guess whether paul will like it or dislike it are the choices unclear correct we could easily classify song a but when the choice became complicated as in the case of song b yes and that's where machine learning comes in let's see how in the same example for song b if we draw a circle around the song b we see that there are four votes for like whereas one would for dislike if we go for the majority votes we can say that paul will definitely like the song that's all this was a basic machine learning algorithm also it's called k nearest neighbors so this is just a small example in one of the many machine learning algorithms quite easy right believe me it is but what happens when the choices become complicated as in the case of song b that's when machine learning comes in it learns the data builds the prediction model and when the new data point comes in it can easily predict for it more the data better the model higher will be the accuracy there are many ways in which the machine learns it could be either supervised learning unsupervised learning or reinforcement learning let's first quickly understand supervised learning suppose your friend gives you one million coins of three different currencies say one rupee one euro and one dirham each coin has different weights for example a coin of one rupee weighs three grams one euro weighs seven grams and one dirham weighs four grams your model will predict the currency of the coin here your weight becomes the feature of coins while currency becomes the label when you feed this data to the machine learning model it learns which feature is associated with which label for example it will learn that if a coin is of 3 grams it will be a 1 rupee coin let's give a new coin to the machine on the basis of the weight of the new coin your model will predict the currency hence supervised learning uses labeled data to train the model here the machine knew the features of the object and also the labels associated with those features on this note let's move to unsupervised learning and see the difference suppose you have cricket data set of various players with their respective scores and wickets taken when you feed this data set to the machine the machine identifies the pattern of player performance so it plots this data with the respective wickets on the x-axis while runs on the y-axis while looking at the data you'll clearly see that there are two clusters the one cluster are the players who scored higher runs and took less wickets while the other cluster is of the players who scored less runs but took many wickets so here we interpret these two clusters as batsmen and bowlers the important point to note here is that there were no labels of batsmen and bowlers hence the learning with unlabeled data is unsupervised learning so we saw supervised learning where the data was labeled and the unsupervised learning where the data was unlabeled and then there is reinforcement learning which is a reward based learning or we can say that it works on the principle of feedback here

let's say you provide the system with an image of a dog and ask it to identify it the system identifies it as a cat so you give a negative feedback to the machine saying that it's a dog's image the machine will learn from the feedback and finally if it comes across any other image of a dog it will be able to classify it correctly that is reinforcement learning to generalize machine learning model let's see a flowchart input is given to a machine learning model which then gives the output according to the algorithm applied if it's right we take the output as a final result else we provide feedback to the training model and ask it to predict until it learns i hope you've understood supervised and unsupervised learning so let's have a quick quiz you have to determine whether the given scenarios uses supervised or unsupervised learning simple right scenario 1 facebook recognizes your friend in a picture from an album of tagged photographs scenario 2 netflix recommends new movies based on someone's past movie choices scenario 3 analyzing bank data for suspicious transactions and flagging the fraud transactions think wisely and comment below your answers moving on don't you sometimes wonder how is machine learning possible in today's era well that's because today we have humongous data available everybody is online either making a transaction or just surfing the internet and that's generating a huge amount of data every minute and that data my friend is the key to analysis also the memory handling capabilities of computers have largely increased which helps them to process such huge amount of data at hand without any delay and yes computers now have great computational powers so there are a lot of applications of machine learning out there to name a few machine learning is used in healthcare where diagnostics are predicted for doctor's review the sentiment analysis that the tech giants are doing on social media is another interesting application of machine learning fraud detection in the finance sector and also to predict customer churn in the e-commerce sector while booking a gap you must have encountered surge pricing often where it says the fair of your trip has been updated continue booking yes please i'm getting late for office well that's an interesting machine learning model which is used by global taxi giant uber and others where they have differential pricing in real time based on demand the number of cars available bad weather rush r etc so they use the surge pricing model to ensure that those who need a cab can get one also it uses predictive modeling to predict where the demand will be high with the goal that drivers can take care of the demand and search pricing can be minimized great hey siri can you remind me to book a cab at 6 pm today ok i'll remind you thanks no problem comment below some interesting everyday examples around you where machines are learning and doing amazing jobs so that's all for machine learning basics today from my site keep watching this space for more interesting videos until then happy learning