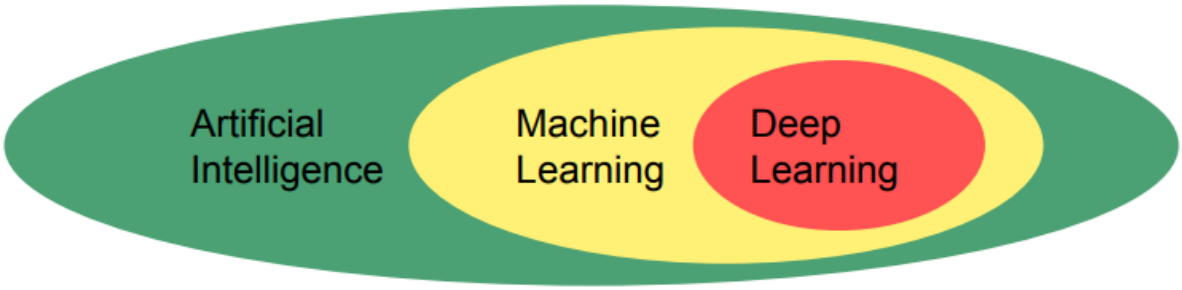
Introduction to deep learning

What is Machine Learning?

Machine learning has risen to prominence as a priority for development teams searching for novel methods to harness data assets to assist the business achieve a new degree of knowledge. Why would you want to incorporate machine learning into the mix? With the appropriate machine learning models, firms can continuously predict changes in their business, enabling them to predict what will happen next. Due to the ongoing addition of data, the machine learning models ensure that the solution is always up to date. The benefit is straightforward: by combining the most relevant and continuously changing data sources with machine learning, you can forecast the future.

Machine learning is a subset of artificial intelligence that enables a system to learn through data analysis rather than explicit programming. Machine learning, on the other hand, is not a straightforward process. Machine learning is a collection of algorithms that learn from data iteratively in order to enhance, characterise, and predict results.

As the algorithms consume training data, it becomes possible to generate more exact models. A machine learning model is the output generated by a machine learning algorithm after it has been trained with data. Following training, when you offer an input to a model, you will receive an output. A predictive algorithm, for instance, will generate a predictive model. After providing data to the predictive model, you will obtain a prediction based on the data used to train the model. Machine learning is currently required for the development of analytics models.



Uses of Machine Learning:

Machine learning has an infinite number of applications, and there are numerous machine learning algorithms accessible for learning. They are available in a variety of configurations, from the simplest to the most complicated. The following are the top ten applications of machine learning:

- Image Recognition
- Voice Recognition
- Predictions
- Videos Surveillance
- Social Media Platform
- Spam and Malware
- Customer Support
- Search Engine
- Applications/Companies
- Fraud and Preference

What is Deep learning?

Deep learning is a subset of machine learning that uses multiple layers of neural networks to iteratively learn from data. Deep learning is particularly advantageous when attempting to deduce patterns from unstructured data.
Deep learning – sophisticated neural networks — is supposed to mimic how the human brain functions in order to train computers to deal with abstract concepts and poorly defined issues.

The average five-year-old child can easily distinguish between his teacher's and the crossing guard's faces.

In comparison, the computer must use considerable effort determining who is who. Deep learning and neural networks are frequently utilised in image recognition, speech recognition, and computer vision applications.

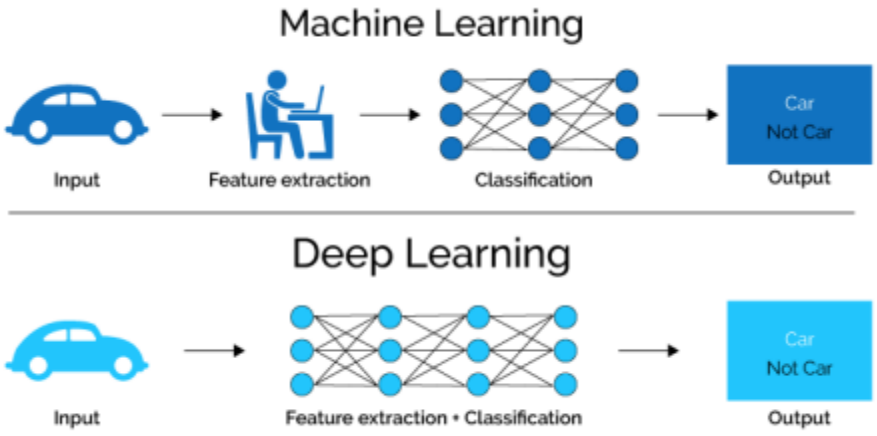
Three or more layers comprise a neural network: an input layer, one or more hidden layers, and an output layer. The input layer is used to acquire data. The data is then updated in the hidden and output layers according to the weights assigned to these nodes. A typical neural network may consist of dozens or even millions of tightly connected basic processing units. When a neural network contains numerous hidden layers, the term "deep learning" is employed. A

neural network iteratively adapts and infers until a predefined stopping point is reached. For image identification and computer vision applications, neural networks are frequently utilised.

Deep learning is a type of machine learning that uses hierarchical neural networks to derive knowledge from a combination of unsupervised and supervised techniques. Deep learning is frequently referred to as a subfield of machine learning. Typically, deep learning is used to discover patterns in unlabeled and unstructured data. While deep learning is quite similar to a regular neural network, it will have a significantly larger number of hidden layers. The more complicated the problem is, the more hidden layers the model will contain.

Numerous fields will see an impact on enterprises as a result of deep learning. For instance, speech recognition will find use in a variety of applications ranging from automobile to customer administration. Deep learning can be used to forecast when a machine will malfunction in Internet of Things (IoT) industrial applications. Deep learning algorithms can assist law enforcement officials in tracking a known suspect's movements.

Machine Learning vs Deep learning:



- The biggest advantage in favor of Deep learning is no hand engineering of parameters or features. It's kind of automated.
- Works very well with large feature space, where most ML models struggle to do any better.
- Works well with noisy data as well
- This saves a lot of time for the developers
- DL has consistently outperformed most ML models with large sample of data in terms of accuracy, loss and precision

But it doesn’t mean that DL is the best solution for every problem. Each problem is unique and exploratory data analysis must be performed beforehand in order to determine best suited technique.There is always a trade off. In case of Better accuracy, it comes with large amount of training data.

Why only talk about knowledge when you can work it? Join our program to get trained and work on live industry projects and get certified by start-ups. Use your skills on projects and increase your practical knowledge.