**Deep Learning**

Deep learning refers to a set of techniques by which we can achieve varying degrees of artificial intelligence by mimicking the working of a human brain. Before we talk more about deep learning, let us understand the relationship between AI, ML and DL.



As we can see from the above diagram, Deep learning is a subset of Machine Learning techniques that aim to achieve Artificial Intelligence. The distinguishing feature of Deep Learning is its use of various Artificial Neural Networks, that imitate the human brain. Just as in the brain, Artificial Neural Networks or ANNs also consist of neurons and synapses between them.



The above figure is a sample of an artificial neural network. The ellipses in the figure represent neurons and the dotted lines represent synapses. Using many hidden layers, the neural network is able to handle large degrees of complexity in input layer, to produce accurate predictions in the output layer.

The success of Deep Learning over the last decade has solidified its place as the frontrunner in AI. With impressive progress shown in self-driving vehicles, pharmaceutical drug discovery, Image Recognition, Voice search and Voice-activated assistants, deep learning has made huge strides in a variety of fields.

Some of the factors that have been instrumental in the success of deep learning over the last decade are:

1. An abundance of multimodal data (text, images, video, tables etc)
2. Democratized DL models and Learning Algorithms (ie. A strong ML/DL community)
3. Relatively fast and cheap computing and cloud facilities.

With access to frameworks such as TensorFlow, PyTorch, Keras etc, and widespread availability of models and datasets, deep learning will only continue to grow in terms of sophistication and accessibility.