

## Training Program on Deep Learning (28<sup>th</sup> Sept, 2023 to 18<sup>th</sup> Oct, 2023)

Deep learning is another subset of machine learning that involves neural networks with multiple layers (deep neural networks). These networks, inspired by the structure of the human brain, can automatically learn to represent data through hierarchical abstraction. Deep learning has excelled in tasks such as image and speech recognition, natural language processing, and pattern recognition. It relies on large amounts of labeled data to train complex models and is particularly effective when handling unstructured data. A 21 Days Masterclass on Deep Learning were thus provided to the students from 28<sup>th</sup> Sept, 2023 to 18<sup>th</sup> Oct, 2023. Dr. Souvik Ganguli from the Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala was the coordinator of the program. The program link is given for reference:

<https://www.youtube.com/watch?v=r3n9zs604M0>


The image displays six screenshots from a YouTube video series titled "Introduction of deep learning || Pantech e Learning".

- Top Left:** "INTRODUCTION DEEP LEARNING". A slide showing a brain with gears, representing the concept of deep learning as a subset of Artificial Intelligence technology.
- Top Right:** "AGENDA". A list of topics: Yolo algorithm – object detection, RNN- Recurrent Neural Network, LSTM – Long short-term memory Networks, Gated Recurrent Units, GAN- Generative Adversarial networks, Face recognition using deep learning, Traffic sign classification using Deep learning, Car brand classification using deep learning, Gesture Volume control, and Next word prediction using LSTM.
- Middle Left:** "DEEP LEARNING". A diagram showing the relationship between Artificial Intelligence, Machine Learning, and Deep Learning. Text defines AI as the ability of a machine to imitate intelligent human behavior, ML as the application of AI that allows a system to automatically learn and improve from experience, and DL as the application of machine Learning uses complex algorithms and deep neural networks in a model.
- Middle Right:** "WHAT IS DL INFORMATION". A slide stating "deep learning is made up of neural networks with different layer" and "A neural network attempts to model the human brain's behavior by learning from large data sets, can be used for things like recognizing images, understanding speech, and processing language".
- Bottom Left:** A diagram of a neural network with an "Input Layer" and an "Output Layer".
- Bottom Right:** "WHY DO WE NEED DL?". A slide with four icons and text: "Process huge amount of data", "Perform Complex algorithms", "achieve best performance with large data", and "Feature Selection".

Day 01 - Introduction of deep learning || Pantach e Learning

# WHAT IS NEURAL NETWORK

Deep learning is based on the functioning of a human brain , lets us undartand the biological nueronlook like



Dendrite  
Nucleus  
Axone

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# Application of Deep Learning



## Self Driving car

distinguishes diferent types of object, people, road signs, an drives with out human intervention

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