**What is DL?**

It is a part of machine learning, that uses artificial neural networks with multiple layers to analyze data and learn from it. ANN are inspired by the human brain, and they can be used to solve a wide variety of problems, including image recognition.

**What is neural network? and its types.**

Neural network are machine learning models that mimic the complex function of the human brain. These models consist of interconnected nodes or neurons that process data, learn patterns recognition and decision making.

Types of neural network are:

1. Feedforward Neural Networks

This a form of artificial neural network where without forming any cycles between layers or nodes means inputs can pass data through those nodes within the hidden level to the output nodes.

2. Convolutional Neural Networks (CNNs)

This structure is focused on processing the grid type data like images and videos by using convolutional layers filtering driving the patterns and spatial hierarchies.

3. Recurrent Neural Networks (RNNs)

This handles sequential data in which the current output is a result of previous inputs by looping over themselves to hold internal state (memory).

4. Long Short-Term Memory Networks (LSTMs)

This are a variant of RNNs. They exhibit memory cells to solve the disappearing gradient issue and keep large ranges of information in their memory.

5. Gated Recurrent Units (GRUs)

This is the second usual variant of RNNs which is working on gating mechanism just like LSTM but with little parameter.

6. Radial Basis Function Networks (RBFNs)

This networks can be regarded as models which define radial basis functions that are very useful in the function approximation and classification approaches, being useful in complex input-output data modelling.

7. Self-Organizing Maps (SOMs)

This are unsupervised neural networks; these networks are used for unsupervised cluster generation based on the retaining of topological features of the high dimensional data from an upper dimensional source, transformed into low dimensional form of output data.

8. Deep Belief Networks (DBNs)

The architecture of the this is built on many stochastic, latent variables that are used for both deep supervised and unsupervised tasks such as nonlinear feature learning and mid dimensional representation.

9. Generative Adversarial Networks (GANs)

This has made up of of two neural networks, the generator and discriminator, which compete against each other. The generator creates a fake generated data, and the discriminator learns to differentiate the real from and fake data.

10. Autoencoders (AE)

This are feedforward networks (ANNs) that are trained to acquire the most helpful presentations of the information through the process of re-coding the input data. The encoder is pinpointed to precisely map the input into the legal latent space representation, while the decoder does the opposite, decoding the space from this representation.

11. Siamese Neural Networks

This work with networks of the same structure and an identical architecture. Comparison is being made via a similarity metric that can tell the degree of resemblance the two networks have.

12. Capsule Networks (CapsNet)

The layers of capsule networks do not only incorporate localization relations of data but allows multilevel structure by passing the information from lower convolutional layers to higher. They use cyclicals to the items and their bodies too, of course, they do not do that at the same time.

13. Transformer Networks

Transfer network do this by way of self-attention mechanism which results into a parallel process used for making the tokenization inputs faster and thus improved capturing of long range dependencies.

14. Spiking Neural Networks (SNN)

Main thing related with Spiking Neural Networks is the brain functionality which is processed by action potentials (spikes) in biological neurons in the same way. These are the key factors of "neuromorphic" technology which perform the deep learning and avoid another type of processing as well.

**What is CNN in simple words?**

This structure is focused on processing the grid type data like images and videos by using convolutional layers filtering driving the patterns and spatial hierarchies.

**Create short notes about the pipeline we have discussed in a lecture**

Pipelining is the process of accumulating instruction from the processor through a pipeline. It allows storing and executing instructions in an orderly process. It is also known as pipeline processing.

Pipelining is a technique where multiple instructions are overlapped during execution. Pipeline is divided into stages and these stages are connected with one another to form a pipe like structure. Instructions enter from one end and exit from another end.