**WEEK 1**

**T. SNEHA**

**1)What is deep learning?**

**Ans)** Deep learning is a branch of machine learning that uses artificial neural networks to model complex patterns in data. It excels at tasks like image recognition, speech processing, and natural language understanding. Deep learning models automatically learn features from raw data through multiple layers. These models require large datasets and powerful computing resources.

**2)What is Neural network and its type?**

**Ans)** A neural network is a computational model inspired by the human brain, made up of layers of interconnected nodes (neurons) that process data. It's used in deep learning to recognize patterns and make predictions.

Types of Neural Networks:

1. Feedforward Neural Network (FNN) – simplest type, data moves in one direction.
2. Convolutional Neural Network (CNN) – used for image and video processing.
3. Recurrent Neural Network (RNN) – designed for sequential data like text or time series.
4. Generative Adversarial Network (GAN) – used to generate new data similar to training data.
5. Radial Basis Function Network (RBFN) – used for function approximation and classification.

**3)What is CNN?**

**Ans)** A Convolutional Neural Network (CNN) is a type of deep learning model specially designed to work with images. It can automatically detect patterns like edges, shapes, and objects by scanning small parts of the image at a time. CNNs are widely used in tasks like face recognition, medical image analysis, and self-driving cars. They are good at reducing the amount of data while still keeping important features.

**4)Short notes on Pipelines.**

**Ans)** **Data Collection and Loading:** Gather a large dataset and load it into the program for training. This includes organizing and labelling data properly.

**Image Processing and Augmentation:** Prepare the images by resizing, normalizing, and applying techniques like rotation or flipping to increase variety and prevent overfitting.

**Build CNN:** Design a Convolutional Neural Network architecture with layers like convolution, pooling, and fully connected layers to learn patterns from the images.

**Test and Evaluate:** After training, test the model on new data and evaluate its accuracy and performance using metrics like precision, recall, or confusion matrix.