

WEEK1 ASSIGNMENT

Q1. What is Deep Learning?

Answer: - Deep Learning is a subfield of machine learning that uses artificial neural networks especially large, multi-layered ones – to model and solve complex solutions.

Q2. What is Neural Network and its types?

Answer: - A neural network is a computational model inspired by the human brain, consisting of interconnected nodes organized in layers. It is the foundation of many machine learning and deep learning algorithms.

Types of Neural Networks are as follows:

- Convolutional Neural Network (CNN)
- Recurrent Neural Network (RNN)
- Feed Forward Neural Network (FNN)
- Radial Basis Function Network (RBFN)
- Generative Adversarial Network (GAN)
- Modular Neural Network (MNN)

Q3. What is CNN in simple words?

Answer: - A Convolutional Neural Network (CNN) is a type of deep learning model specially designed to understand images. Think it of as a robot brain that looks at pictures and learns to recognize what's in them like a cat, a car, or a face in case of forest fire detection it will investigate image and see it has caught fire or will there be a chance of forest fire.

Q4. Create a Short note on Pipeline we have discussed in a lecture.

Answer: - A deep learning pipeline is a structured process followed to build, train, and deploy deep learning models efficiently. It includes the following key steps:

Data Collection

- Gather data relevant to the problem.
- Ensure data is clean, diverse, and labeled.

Data Preprocessing

- Normalize, resize, or augment data (especially images).
- Split into **training**, **validation**, and **test** sets.

Model Selection

- Choose the right type of neural network.
- Define architecture: number of layers, activation functions, etc.

Training the Model

- Feed training data into the model.
- Use **loss function** and **optimizer** (e.g., Adam, SGD) to adjust weights.
- Iterate through epochs to improve accuracy.