# Week1 Assessment

# Forest Fire Detection

## **Q1.) What is Deep Learning (DL)?**

Ans:- Deep Learning is a subset of machine learning that uses artificial neural networks with many layers (hence 'deep') to model and understand complex patterns in data. It excels at tasks like image and speech recognition by automatically extracting hierarchical features from raw input.

## Q2.) What is Neural Network and its Types?

Ans:- A neural network is a computational model inspired by the human brain, composed of interconnected nodes (neurons) organized in layers. Key types include:

• Feed forward Neural Network (FNN): Data moves in one direction; simplest structure.

• Convolutional Neural Network (CNN): Uses convolutional layers to process grid-like data (e.g., images).

• Recurrent Neural Network (RNN): Has loops to handle sequential data (e.g., text, time series).

• Generative Adversarial Network (GAN): Consists of generator and discriminator networks competing for improved generation of data.

## Q3.) What is CNN in simple words?

Ans:- A CNN (Convolutional Neural Network) is a type of neural network specialized in processing data that has a grid-like topology, such as images. It uses convolutional layers that apply filters to detect features like edges, textures, and shapes, making it highly effective for image classification and object detection.

## Q4.) Create Short Notes about the Pipeline.

Ans:- The typical deep learning pipeline for forest fire detection includes:

1. Data Collection: Gathering satellite or camera images of forest areas.  
2. Image Processing & Image Augmentation: Re-sizing images, normalization, data augmentation (flips, rotations).  
3. CNN Model Building: Designing a CNN architecture or using a pre-trained model (e.g., Tensorflow).  
4. Testing: Feeding pre-processed images into the model, optimizing weights using back propagation.  
5. Evaluation: Assessing performance on a validation set using metrics like accuracy, precision, recall.

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