Week 1 Assessment - Forest Fire Detection Using Deep Learning

# 1. What is Deep Learning (DL)?

Deep Learning is a type of machine learning that uses special algorithms called neural networks to learn from large amounts of data such as images, videos, or audio. It mimics how the human brain works. ‘Deep’ refers to the multiple layers in the model.

# 2. What is a Neural Network and its types?

A neural network is a system of algorithms that recognizes patterns and works like a simplified version of the brain. It includes:  
- Input layer (data enters)  
- Hidden layers (processing)  
- Output layer (result)  
  
Types of Neural Networks:  
- ANN (Artificial Neural Network): Basic type used for simple tasks.  
- CNN (Convolutional Neural Network): Used for image-related tasks.  
- RNN (Recurrent Neural Network): Used for time-based data like text or audio.

# 3. What is CNN in simple words?

CNN (Convolutional Neural Network) is a type of neural network mainly used for image processing. It can detect patterns, such as fire, face, or object, and understand what's inside an image.  
  
In our project, CNN checks forest images and classifies them as 'Fire' or 'No Fire'.

# 4. Short notes about the pipeline discussed in the lecture:

Project Pipeline Steps:  
1. Data Collection – Collect images with fire and without fire.  
2. Data Preprocessing – Resize images, convert to arrays.  
3. Model Building – Build a CNN model.  
4. Training – Train the model using labeled data.  
5. Testing – Evaluate using test data.  
6. Prediction – Model predicts 'Fire' or 'No Fire'.  
7. Deployment – Use model in apps or real-time systems.