**What is DL (Deep Learning)?**

DL stands for Deep Learning, a subfield of machine learning that uses neural networks with many layers to automatically learn features from data.

**What is a Neural Network and its types?**

A neural network is a computational model inspired by the human brain, consisting of interconnected nodes (neurons) that process data in layers.

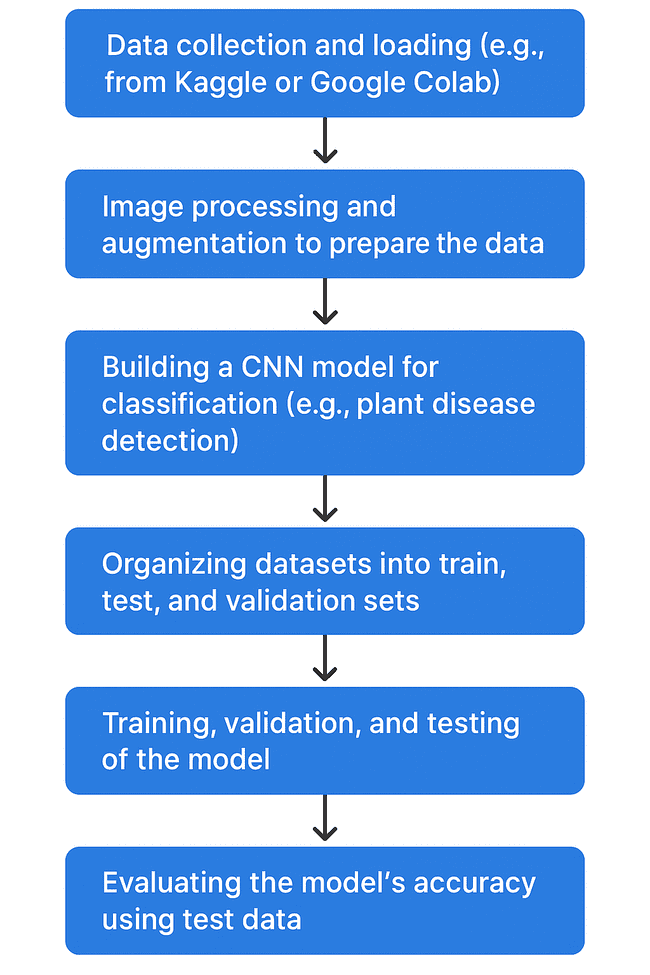
**Types of neural networks include:**

1. **Feedforward Neural Network (FNN)**  
    Data flows in one direction; simplest form of neural network.  
    *Example: Image classification (MNIST digit recognition).*
2. **Convolutional Neural Network (CNN)**  
    Uses convolution layers for image and spatial data processing.  
    *Example: Object detection in autonomous vehicles.*
3. **Recurrent Neural Network (RNN)**  
    Processes sequential data using internal memory.  
    *Example: Text prediction in chatbots.*
4. **Long Short-Term Memory (LSTM)**  
    An advanced RNN that captures long-term dependencies.  
    *Example: Language translation apps.*
5. **Gated Recurrent Unit (GRU)**  
    A simpler alternative to LSTM with fewer gates.  
    *Example: Music generation models.*
6. **Generative Adversarial Network (GAN)**  
    Two networks compete to generate realistic data.  
    *Example: Creating realistic human faces.*
7. **Radial Basis Function Network (RBFN)**  
    Uses distance-based activation functions.  
    *Example: Pattern recognition in medical diagnosis.*
8. **Modular Neural Network (MNN)**  
    Consists of separate networks working in parallel.  
    *Example: Multi-task financial risk analysis.*
9. **Self-Organizing Map (SOM)**  
    Unsupervised learning to map high-dimensional data to 2D.  
    *Example: Market trend clustering.*
10. **Autoencoder**  
     Learns efficient data codings for unsupervised tasks.  
     *Example: Image noise reduction.*

***Short notes about the pipeline discussed in the lecture:***

***The project pipeline includes:***

* + *Data collection and loading (e.g., from Kaggle or Google Colab)*
  + *Image processing and augmentation to prepare the data*
  + *Building a CNN model for classification (e.g., plant disease detection)*
  + *Training, validation, and testing of the model*
  + *Evaluating the model’s accuracy using test data*
  + *Organizing datasets into train, test, and validation sets*

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