Module 7 – Convolutional Neural Networks - Overview

In this module on “**Convolutional Neural Networks (CNNs)**”, I studied how CNNs revolutionized image processing by maintaining spatial hierarchies. I did a manual hands-on experiment with a CNN structure. Core components include convolutional layers for feature extraction, pooling layers for dimensionality reduction, and fully connected layers for final classification. I examined how CNNs detect edges, textures, and complex patterns through layers, improving tasks like image classification, object detection, and face recognition. Examples include popular architectures like VGG, ResNet, and YOLO. Here are some key points I learned during this module.

* **Core Components of CNNs**: Convolutional layers for feature extraction. Pooling layers for dimensionality reduction. Fully connected layers for final classification.
* **Functionality of CNNs**: Detecting edges, textures, and complex patterns through multiple layers.
* **Applications of CNNs**: Enhancing tasks like image classification, object detection, and face recognition.
* **Popular CNN Architectures**: Studied examples such as VGG, ResNet, and YOLO.
* **Hands-on Experience**: Practical experiments with CNN assignments to reinforce learning.