Module 8 – CNN Basic Architectures and Transfer Learning - Overview

In this module on “**Basic Architectures and Transfer Learning**”, we delved into the foundational CNN architectures and the concept of transfer learning. Starting with LeNet, one of the first CNNs designed for digit recognition, and progressing to AlexNet, which popularized deep CNNs by winning the ImageNet competition, we explore their structures, innovations, and impact on computer vision. Transfer learning, a powerful technique, utilizes pre-trained models on large datasets to improve performance on new, related tasks with less data and training time. Examples include VGGNet, ResNet, and Inception, which build on these early architectures to solve complex vision tasks. Here are some key points I learned during this module.

* **Foundational CNN Architectures**:
* LeNet: Early CNN designed for digit recognition.
* **AlexNet**:
* Popularized deep CNNs by winning the ImageNet competition.
* **Structure and Innovations**:
* Examined the structure and key innovations of foundational architectures like LeNet and AlexNet.
* Impact of these architectures on the field of computer vision.
* **Transfer Learning**:
* Utilizes pre-trained models on large datasets.
* Enhances performance on new, related tasks with less data and training time.
* **Advanced Architectures**:
* VGG16: Known for its simplicity and depth.
* ResNet: Introduced residual connections to solve the vanishing gradient problem.
* **Practical Applications**:
* Applying transfer learning and advanced architectures to solve complex vision tasks.