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Introduction to CNN and RCNN

What is CNN (Convolutional Neural Network)?

CNNs are a class of deep neural networks widely used in image classification, object detection, and video analysis. They are biologically inspired by the visual cortex and can automatically detect important features in an image, such as edges, colors, and patterns.

Basic Layers of CNN:

- **Convolution Layer** – Applies filters to extract features like edges and textures.
- **ReLU (Activation)** – Adds non-linearity.
- **Pooling Layer** – Reduces spatial dimensions and computation.
- **Fully Connected Layer** – Performs classification based on extracted features.

Use Cases:

- Image classification (e.g., cat vs dog)
- Face recognition
- Medical image analysis

What is RCNN (Region-based CNN)?

RCNN is an extension of CNN, designed specifically for object detection — identifying what objects are in an image and where they are located. It combines region proposal algorithms with CNNs for localizing multiple objects in an image.

> **Key Idea:**