Conquering Fashion MNIST with CNNs using Computer Vision

Computer Vision

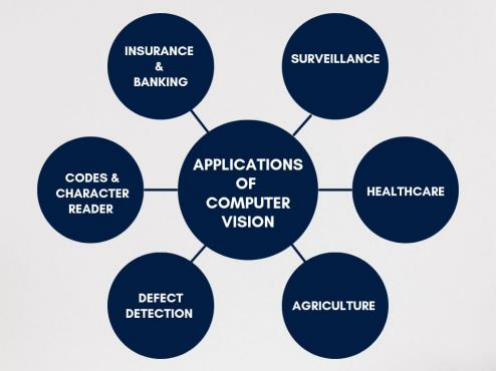
One area of artificial intelligence called computer vision teaches and equips machines to comprehend the visual environment. Deep learning models and digital photos can be used by computers to precisely recognize, categorize, and respond to objects.

How is computer vision implemented?

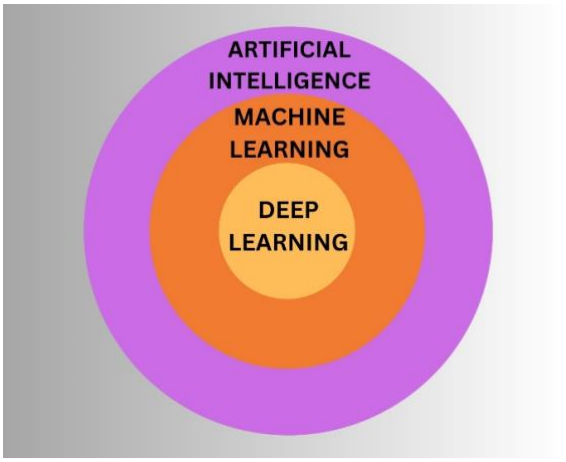
For computer vision, enormous volumes of data are needed. The system is subjected to numerous data analysis until it can distinguish between items and recognize images. The two main methods used to accomplish this are convolutional neural networks, a crucial type of a neural network, and deep learning, a particular type of machine learning.

Computer Vision Applications

Computer vision is one area of machine learning where core concepts are already present in widely used products. Applications are as follows:

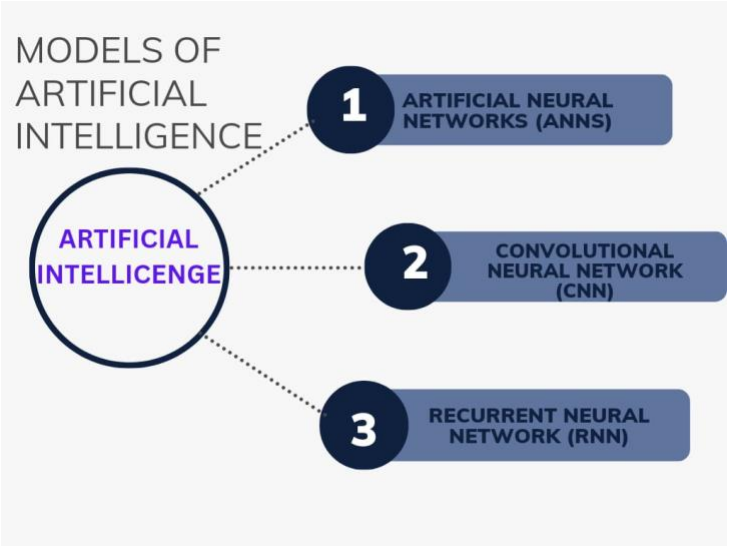


Artificial intelligence (AI):



What is it?

The replication of human intelligence functions by machines, particularly computer systems, is known as artificial intelligence. Expert systems, natural language processing, speech recognition, and machine vision are some examples of specific AI applications.



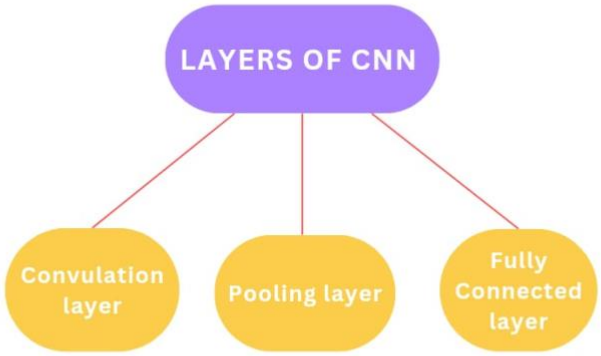
What is CNN?

CNN is a potent image processing algorithm. Right now, these are the best algorithms available for automatically processing photos. These algorithms are widely used by businesses to do tasks like object identification in images.

RGB combination data is present in images. An image from a file can be loaded into memory using Matplotlib. The computer only sees a series of numbers; it cannot perceive an image. 3-dimensional arrays are used to store colored images. The first two measurements are the image's height and width (measured in pixels). The red, green, and blue hues found in each pixel are represented by the final dimension.

Layers of Convolutional Neural Network (CNN) :

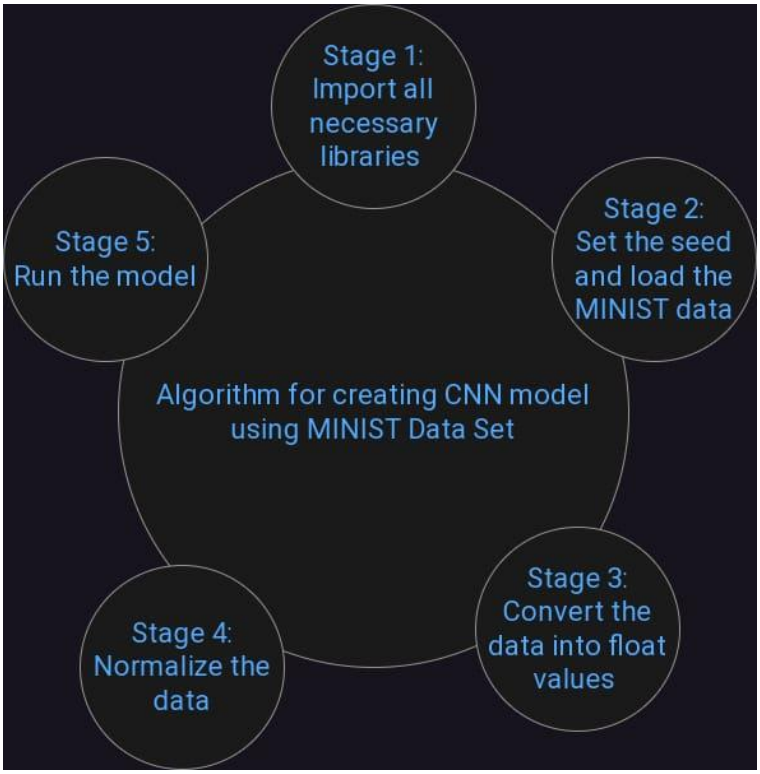
A Convolutional Neural Network (CNN) is a type of deep learning algorithm that is particularly well-suited for image recognition and processing tasks. It is made up of multiple layers, including convolutional layers, pooling layers, and fully connected layers.



Algorithm to solve the Problem Statement

Deep learning is the branch of machine learning that deals with artificial neural networks (ANNs). The term “deep” refers to large-scale neural networks with many hidden units. Deep learning's CNN's have proven to be the most effective approach for image recognition purposes. Keras is a Python-based deep learning library that allows you to create an open-source artificial neural network (ANN).

We will be using Keras to build our own deep learning CNN architecture. The main goal of this is to build a deep learning CNN that will be used to classify images on the well-known MNIST dataset (fashion). The process will be broken down into three parts: Data analysis, Model training & Predictions.



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