**Convolutional neural network**

A convolutional neural network or CNN is an algorithm in deep learning that is mainly used for image classification, object recognition and object detection. The basic building block of a CNN is the convolutional layers in the neural network.

The idea here is the network takes an image as an input, converts it into an array of pixels and passes it to entities known as channels and kernels. These process the image and produce an output which is a probability value of the image belonging to a certain class like a dog, cat.

**Kernel**: Kernels are used to extract values from images. They represent some type of feature which is particular to that image.

**Channels**: Channels are parts of images that stacked over one another to form the entire image.

In this practice session, we will learn to code an Image classifier with CNN.

We will perform the following steps to build a simple classifier using the fruits dataset.

**Data pre-processing**

* Import libraries required
* Load the dataset(dataset link: <https://www.kaggle.com/mbkinaci/fruit-images-for-object-detection?select=test_zip> )
* Label encoding the data
* Split the data into features and target and convert the target into a proper format

**CNN Model Building**

* Build a simple CNN architecture
* add dropout and regularizer
* Compile and train the model
* Make predictions