**CNN**

In neural networks, Convolutional neural network is one of the main categories to do images recognition, images classifications. CNN image classifications takes an input image, process it and classify it under certain categories. Computers sees an input image as array of pixels and it depends on the image resolution. Technically, deep learning CNN models to train and test, each input image will pass it through a series of convolution layers with filters, Pooling, fully connected layers and apply Softmax function to classify an object with probabilistic values between 0 and 1.

**CONVOLUTIONAL LAYER**

Convolution is the first layer to extract features from an input image. Convolution of an image with different filters can perform operations such as edge detection, blur and sharpen by applying filters.

*STRIDES*

Stride is the number of pixels shifts over the input matrix. When the stride is 1 then we move the filters to 1 pixel at a time. When the stride is 2 then we move the filters to 2 pixels at a time and so on.

*PADDING*

Sometimes filter does not fit perfectly fit the input image. We have two options:

* Pad the picture with zeros (zero-padding) so that it fits
* Drop the part of the image where the filter did not fit. This is called valid padding which keeps only valid part of the image.

**Pooling Layer**

**P**ooling layers section would reduce the number of parameters when the images are too large. There are 3 types of polling

* Max Pooling
* Average Pooling
* Sum Pooling

Max pooling takes the largest element from the rectified feature map. Taking the largest element could also take the average pooling. Sum of all elements in the feature map call as sum pooling.

**Fully Connected Layer**

The layer we call as FC layer, we flattened our matrix into vector and feed it into a fully connected layer like neural network.