

Convolutional neural network:- (CNN)

* The main objective of CNN is to do the image processing, image classification.

* The process of converting ~~to~~ a grayscale (Black & white) or the RGB image into simpler image with minimum scale is called the convolution.

* This process will ~~has more~~ take place again and again in order to process the image as step by step.

* The convolutional layers will ~~be~~ detect different parts of image such as vertical edge, horizontal edge, using different filters.

Lets consider a 6×6 image (Black & white image)

Grayscale = 0 - 255

0 \Rightarrow dark

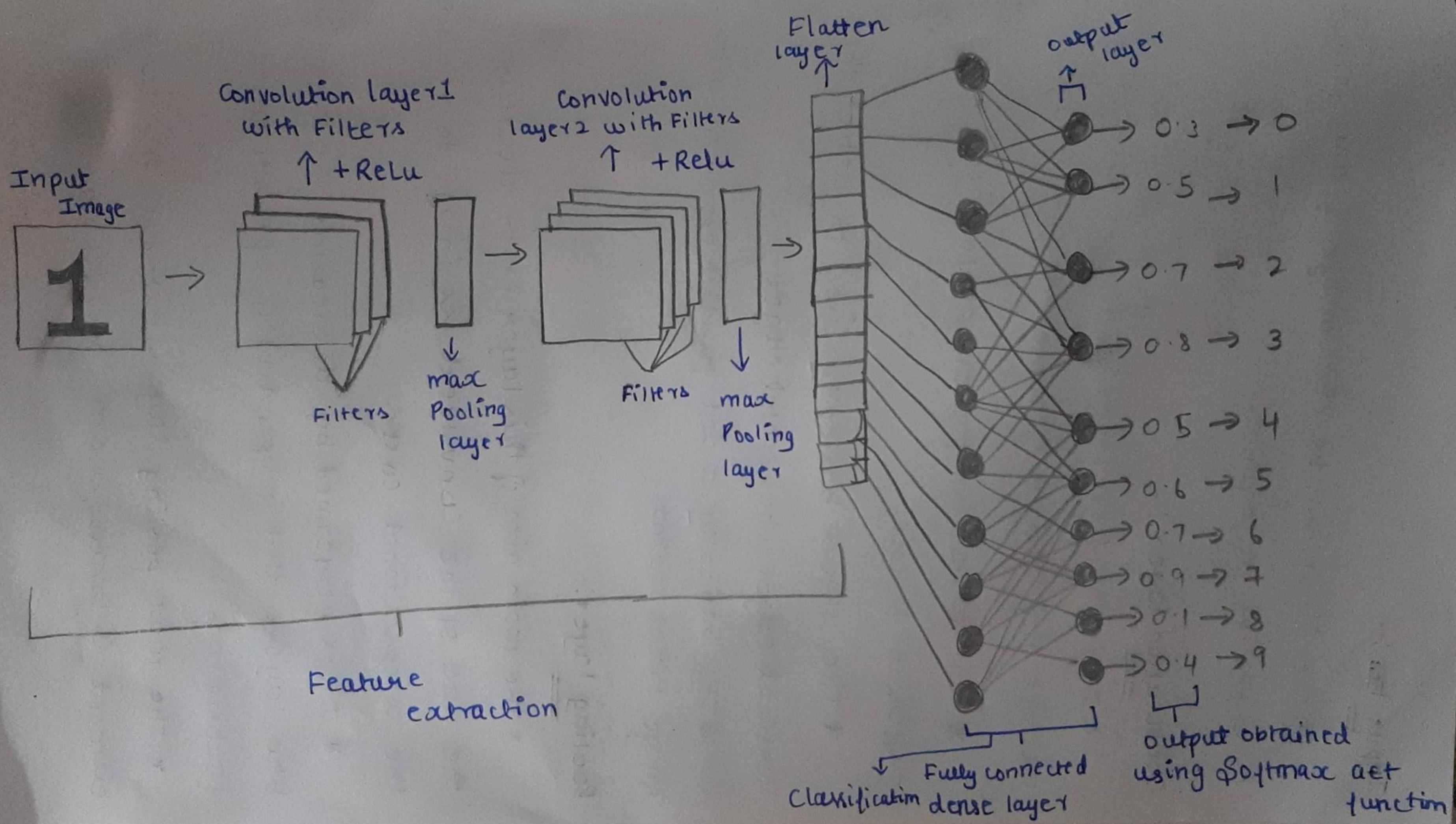
255 \Rightarrow light

0	0	0	255	255	255
0	0	0	255	255	255
0	0	0	255	255	255
0	0	0	255	255	255
0	0	0	255	255	255
0	0	0	255	255	255

6×6

* Now the task is to process this 6×6 image.

* For this we have to do convolution process using filter.



Input :-

* The input will be the image of any format in order to recognize.

Convolution layer :-

* It is the first layer and it is used to extract the various features of the image.

* The extraction process performed using different filters.

* The filters basically used to detect the vertical edges, horizontal edges.

* It's basically a dot product operation with image pixel matrix.

Pooling layer :-

* The main aim of this layer is to decrease the size of the convolved ~~per~~ image to reduce the computational costs.

* It is performed by decreasing the connection btw layers and independently operates on each feature map.

* The max pooling layer extracts the largest element ~~is taken~~ from the feature map.

it literally means, it extracts the maximum information of feature map.

• Avg pooling calculates the avg of elements in a predefined sized image section.

Fully connected layer:-

• It is the dense layer

• The output from the convolution layer will be flattened in the flatten layer.

• Then values in flatten layer given to the dense layer.

• Then actual ANN process takes place.

• Then output will be produced as classified what the image is, Like, if the input is image of number, then output will be number.