**Project Objectives**

**1.**You will be able to learn how to get and prepare the dataset

The choice of data entirely depends on the problem you’re trying to solve.The good thing is that data is means to an end, in other words, the quantity of the data is important but not as important as the quality of it. So, if you’d like to be independent and create your own dataset and begin with a couple of hundred lines and build up the rest as you’re going.

**2.**You will be able to know how to do image processing.

Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image.

Nowadays, image processing is among rapidly growing technologies. It forms core research area within engineering and computer science disciplines too.

Image processing basically includes the following three steps:

**-**Importing the image via image acquisition tools;

**-**Analysing and manipulating the image;

**-**Output in which result can be altered image or report that is based on image analysis.

**3.**You will understand how CNN layers are work.

CNN (Convolutional Neural Network or ConvNet) is a type of feed-forward artificial network where the connectivity pattern between its neurons is inspired by the organization of the animal visual cortex.

Generally, A Convolutional neural network has three layers. And we understand each layer one by one with the help of an example of the classifier. With it can classify an image of an X and O. So, with the case, we will understand all four layers.

**-**Convolutional

**-**ReLU Layer

**-**Pooling

**-**Fully Connected Layer

**4.**Classify images using a Convolutional Neural Network

CNN is a machine learning algorithm for machines to understand the features of the image with foresight and remember the features to guess whether the name of the new image is fed to the machine.

**5.**You will be able to know what are the activation functions can be used.

It’s just a thing function that you use to get the output of node.It is also known as Transfer Function.It is used to determine the output of neural network like yes or no. It maps the resulting values in between 0 to 1 or -1 to 1 etc. (depending upon the function)

**6.**You will be able to know how to read images using OpenCV.

In OpenCv module,we can use the function cv2. imread() to read an image. When inputting the image path, the image should be in the working directory or a full path of image should be given. cv2

**-**cv2.IMREAD\_COLOR − This function loads a color image and any transparency of image will be neglected. It is the default flag.

**-**cv2.IMREAD\_GRAYSCALE − This function loads image in grayscale mode

**-**cv2.IMREAD\_UNCHANGED − This function loads image as such including alpha channel.

**7.**You will know convolutional Neural Networks for Computer vision AI Problems.

CNN is a computer vision deep learning network that can recognize and classify picture features. CNN architecture was influenced by the organization and functions of the visual cortex. It is designed to resemble the connections between neurons in the human brain