

Analyzing The Data

TEAM ID : PNT2022TMID28890

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Let's see the Information of an image lying inside the x_train variable

Understanding the data

```
x_train[0]#printing the first image
```

```
[ 0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
  0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  3,
 18, 18, 18, 126, 136, 175, 26, 166, 255, 247, 127,  0,  0,
 0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0, 30, 36, 94, 154, 170,
253, 253, 253, 253, 253, 225, 172, 253, 242, 195, 64,  0,  0,
0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0, 49, 238, 253, 253, 253, 253,
253, 253, 253, 253, 251, 93, 82, 82, 56, 39,  0,  0,  0,
0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0, 18, 219, 253, 253, 253, 253,
253, 198, 182, 247, 241,  0,  0,  0,  0,  0,  0,  0,  0,
0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0, 80, 156, 107, 253, 253,
205, 11,  0, 43, 154,  0,  0,  0,  0,  0,  0,  0,  0,
0,  0],
[ 0,  0,  0,  0,  0,  0,  0,  0,  0,  0, 14,  1, 154, 253,
```

Basically, the pixel values range from 0-255. Here we are printing the first image pixel value which is index[0] of the training data. As you see it is displayed in the output.

With respect to this image, the label of this image will be stored in y_train let's see what is the label of this image by grabbing it from the y_train variable

```
y_train[0]#printing lable of first image  
  
5
```

As we saw in the previous screenshot, we get to know that the pixel values are printed. Now here we are finding to which image the pixel values belong to. From the output displayed we get to know that the image is '5'.

Lets Plot the image on a graph using the Matplot library

```
import matplotlib.pyplot as plt #used for data visualization  
plt.imshow(X_train[0]) #ploting the index=0 image  
  
<matplotlib.image.AxesImage at 0x1c397af32e0>
```

A plot of a handwritten digit '5' on a dark background. The digit is rendered in a bright yellow-green color. The plot includes x and y axes with tick marks at intervals of 5, ranging from 0 to 25. The digit is positioned in the center-left area of the plot.

Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python. By using the Matplotlib library we are displaying the number '5' in the form of an image for proper understanding.

Note: You can see the results by replacing the index number till 59999 as the train set has 60K images