

TRAFFIC LIGHT COLOR DETECTION USING OpenCV

- First I have loaded the images and converted them to HSV images which are used to detect different colours from them.
- Then I gathered the BGR color codes ranges of RED, GREEN and YELLOW color.
- And Created the masks for each color which only contain RED, GREEN and YELLOW color
- Then I have used a technique called **Hough Circles** which are used to detect the circle in images.
- This technique we have applied to that mask that we have created earlier and then detected circles are stored in array.
- Then IF conditions are applied for detecting and drawing contour of circles around traffic light color and adding text to the images.
- Showing the output images and saving the output Images .

We can also do this by deep learning using the CNN models if we have enough dataset and labels. Here is the pipeline :

❖ **EXTRACT TRAFFIC LIGHT FROM IMAGES USING OBJECT DETECTION**

❖ **SEPARATE THE TRAFFIC LIGHT IMAGES BY COLOR**

- ❖ **Collect Photos of traffic light images by green, red, yellow, off and create a dataset.**
- ❖ **Now we have our custom dataset and we can train our CNN.**

- ❖ Then we will do **IMAGE PREPROCESSING** and keep 20% data for Validation dataset and 80% will be used for Training the dataset.
- ❖ Then we will create a Convolutional Neural Network using **Conv2D,MaxPooling2D,Flatten,Dense** layers and we will Train the datasets.
- ❖ Now our color detection model is ready
- ❖ And we will Pass the Test Images and get our results.