# VEHICLE COUNTING AND NUMBER PLATE DETECTION

**Dr.C K GOMATHY[1], Mr. B.SANDEEP SAI[2], Mr. A.PRADEEP REDDY[3], Mr. CH.NITISH[4]**

---

**ABSTRACT:-** Traffic monitoring is a challenging task in real time. Traditional traffic monitoring procedures are manual, expensive, time consuming and involve human operators. It is now possible to implement object detection and counting, behavioral analysis of traffic patterns, number plate recognition in surveillance on video streams produced by traffic monitoring and surveillance cameras. This project works to develop a system where the footage from a traffic camera is analyzed and reports are generated. Here our project concentrates on the vehicle number plate detection, vehicle count in video streaming. Our Framework uses python, image processing technique,

**Keywords:** Open cv, digital image processing, optical character recognition, ALPR, vehicle counting, traffic monitoring.

## I. INTRODUCTION

The need for Automatic Number Plate Recognition System arose when the number of vehicles on roads drastically increased and the recognition by a human eye became difficult. Later on, specialists started using video footages of traffic to identify the vehicle they needed. But this also became difficult in cases when the clarity of the video is low and also required human supervision. These challenges welcomed an Automated workflow. This is used to uniquely identify a vehicle. It is a part of Image Processing Technology. Vehicle detection and counting number of vehicles on road, along with finding the density of traffic in an area is important in computing traffic congestion on highways. This method uses image processing techniques to count the number of vehicles on road and estimate the density.

## II. EXISTING SYSTEM

The escalating increase of contemporary urban and national road networks over the last decades emerged the need of efficient monitoring and management of road traffic. Meanwhile, rising vehicle use causes social problems such as accidents, traffic congestion, and consequent traffic

### Disadvantages

1. Sometimes due to the speed of the vehicle it may capture blurred images.
2. Not practicable to have manual count for 24 hrs of the day and throughout the year
3. Counts of remote areas is possible by automatic devices.
4. It requires strict lane dis cip line.
5. Non motorized vehicles are hard to detect.
6. Overhead reading (fail to read).

## III. PROPOSED SYSTEM

The system could be used for detection, recognition and tracking of the vehicles in the video frames and then classify the detected vehicles according to their size in three different classes. The proposed system is based on three modules which are background learning, fore ground extraction and vehicle classification as shown in Background subtraction is a classical approach to obtain the foreground image or in other words to detect the moving objects

## IV. IMPLEMENTATION

### FRAME DIFFERENCING

A video is a set of frames stacked together in the right sequence. So, when we see an object moving in a video, it means that the object is at a different location at every consecutive frame.

If we assume that apart from that object nothing else moved in a pair of consecutive frames, then the pixel difference of the first frame from the second frame will highlight the pixels of the moving object. Now, we would have the pixels and the coordinates of the moving object. This is broadly how the frame differencing method works.

Let's take an example. Consider the following two frames from a video:


Frame 1


Frame 2

It is the position of the hand holding the pen that has changed from frame 1 to frame 2. The rest of the objects have not moved at all. So, as I mentioned earlier, to locate the moving object, we will perform frame differencing. The result will look like this:

You can see the highlighted or the white region where the hand was present initially. Apart from that, the notepad is also highlighted a bit along its edges. This could be due to the change in the illumination by the movement of the hand. It is advisable to get rid of unwanted detection of stationary objects. Therefore, we would need to perform certain image pre-processing steps on the frames.

**Image Thresholding**

In this method, the pixel values of a grayscale image are assigned one of the two values representing black and white colors based on a threshold. So, if the value of a pixel is greater than a threshold value, it is assigned one value, else it is assigned the other value.

In our case, we will apply image thresholding on the output image of the frame differencing in the previous step:

You can see that a major part of the unwanted highlighted area has gone. The highlighted edges of the notepad are not visible anymore. The resultant image can also be called as a binary image as there are only two colors in it. In the next step, we will see how to capture these highlighted regions.

**Finding Contours**

The contours are used to identify the shape of an area in the image having the same color or intensity. Contours are like boundaries around regions of interest. So, if we apply contours on the image after the thresholding step, we would get the following result:

The white regions have been surrounded by grayish boundaries which are nothing but contours. We can easily get the coordinates of these contours. This means we can get the locations of the highlighted regions.

Note that there are multiple highlighted regions and each region is encircled by a contour. In our case, the contour having the maximum area is the desired region. Hence, it is better to have as few contours as possible.

In the image above, there are still some unnecessary fragments of the white region. There is still scope of improvement.

**Image Dilation**

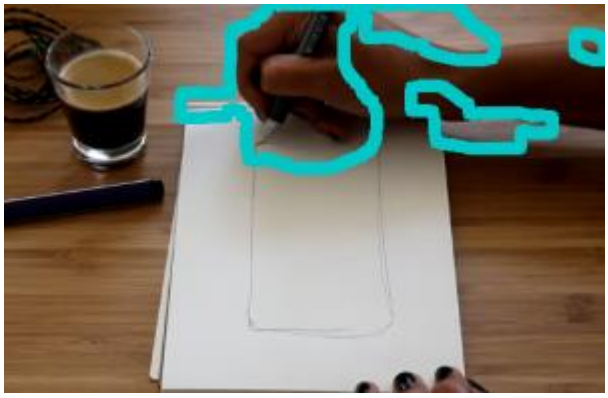
This is a convolution operation on an image wherein a kernel (a matrix) is passed over the entire image. Just to give you intuition, the image on the right is the dilated version of the image on the left.

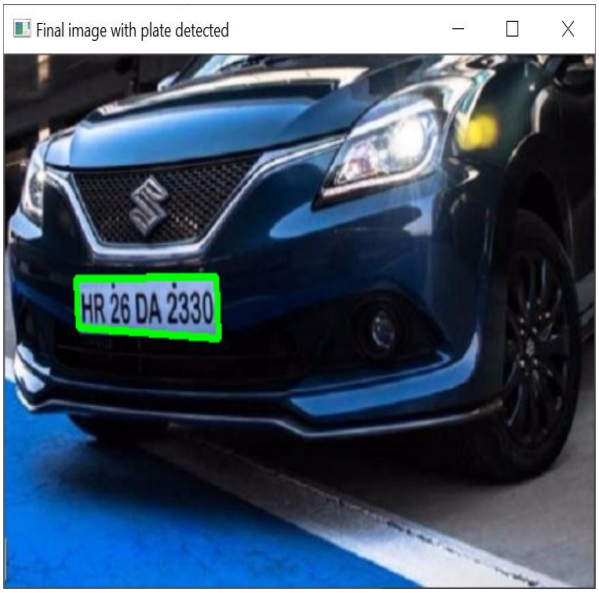
So, let's apply image dilation to our image and then we will again find the contours.

It turns out that a lot of the fragmented regions have fused into each other. Now we can again find the contours in this image.

Here, we have only four candidate contours from which we would select the one with the largest area. You can also

plot these contours on the original frame to see how well the contours are surrounding the moving object.







## V. CONCLUSION:

The projectis developed for Smart city enhancement. Here the License Plate detection, Vehicle detection & Count are used for the traffic flow control. This Effective performance evaluation is deemed important towards achieving successful Smart Video Surveillance Systems. In future we can add some modules like speed detection, wrong way detection to make the system more beneficial in regulating traffic through video surveillance.

## VI. REFERENCE:

1.International Research Journal of Engineering and Technology (IRJET) Volume: 06 Issue: 03 | Mar 2019 e-ISSN: 2395-0056 p-ISSN: 2395-0072 © 2019, IRJET ISO 9001:2008 Certified Journal Page 4987 Number Plate Recognition by using open CV- Python Tella pavani[1], DVR Mohan[2]

2.S. Uma1, M .Sharmila2 Implementation of License Plate Recognition System in ARM Cortex A8 Board IJCEM International Journal of Computational Engineering & Management, Vol. 19 Issue 3, May 2016 ISSN (Online): 2230- 7893 www.IJCEM.org

**Author's Profile:-**

1. DR. B.SANDEEP SAI, Student, B.E. Computer Science and Engineering, Sri Chandrasekharendra SaraswathiViswa Mahavidyalaya deemed to be university, Enathur, Kanchipuram, India. He Area of Big data analytics

2. Mr. A.PRADEEP REDDY, Student, B.E. Computer Science and Engineering, Sri Chandrasekharendra SaraswathiViswa Mahavidyalaya deemed to be university, Enathur, Kanchipuram, India. His Area of Big data analytics

3. Mr. CH.NITISH, Student, B.E. Computer Science and Engineering, Sri Chandrasekharendra SaraswathiViswa Mahavidyalaya deemed to be university, Enathur, Kanchipuram, India. His Area of Big data analytics

4. Dr.C.K.Gomathy is Assistant Professor in Computer Science and Engineering at Sri Chandrasekharendra SaraswathiViswa Mahavidyalaya deemed to be university, Enathur, Kanchipuram, India. Her area of interest is Software Engineering, Web Services, Knowledge Management and IOT.