

## SOBEL EDGE DETECTION METHOD OF TRAFFIC CONTROL USING IMAGE PROCESSING TECHNIQUE

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**Abstract**— An intelligent transportation is important in traffic-related issues to avoid road accidents in heavy traffic areas. Rapid development in technologies the proposed system includes automation of the overtaking of the vehicle is focused and an Automatic Number Plate Recognition method is designed. For transmission purpose Visible Light Communication are used. Automatic number plate recognition method optical character recognition is proposed and recognizes the characters pattern matching is used. The edge detection method is used for this project Sobel edge detection.

**Keywords**—*Transportation, Visual Light Communication, Optical character recognition*

### I. INTRODUCTION

Traffic signals assume an extremely huge part in traffic control. The traffic lights that are utilized these days involve three lights: Red for stop, Yellow for wait and Green for go. Clients are made to trust that the sign will change from red to yellow and afterward from yellow to green. The traffic signals utilized these days are designed at hardwired at the time of design. For wait time the time is already pre-programmed and fixed.

#### Traffic Control Systems

##### Manual Controlling

Manual controlling as the name implies man power is required to control the traffic. Traffic polices are allotted for control the traffic in heavy traffic areas. This needs more man power to work in traffic controlling. So we use

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automatic controlling gives a better result to control the traffic.

##### Automatic Controlling

Automatic traffic light is controlled by image processing technique. In olden days, traffic light system every phase has a constant numerical value loaded in the timer. The lights are automatically getting ON and OFF depending on the timer value changes. The automatic system will detect vehicles through images using digital camera. A camera will be placed alongside the traffic light, it will capture image sequences. Image processing method is a better technique to control the traffic.



Fig.1 Traffic Signal

## Digital Camera

Vehicle present on each road of traffic Digital Camera is used to capture the images .The captured image is stored in the Central processing unit of the Computer. The camera used for capturing image is high quality pixel camera.



. Fig.2 Camera

## Optical character recognition

Optical character recognition is the used in this project to identify the overtaking the vehicles using automatic number plate recognition. OCR systems have a combination of hardware and software to convert physical documents into machine-readable text. Hardware, such as an optical [scanner](#) is used to identify the number plates or read text while software typically handles the advanced processing. Software can also take advantage of artificial intelligence to implement more advanced methods of intelligent character recognition.

## Sobel edge detection

The Sobel edge detection operator performs a 2-D spatial gradient measurement on images. It emphasizes regions of high spatial frequency that correspond to edges. Typically it is used to find the approximate absolute gradient

magnitude at each point in an input grayscale image.

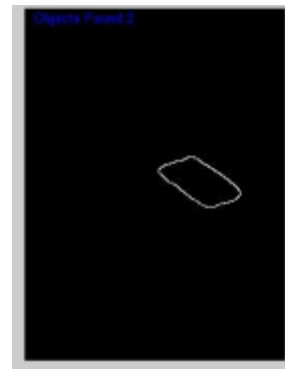


Fig.3 Edge detected image

## II.BLOCK DIAGRAM

To make traffic light controlling more efficient, image processing alongside with intelligent control technique, will be used. This system will increase road capacity and traffic flow it intelligently decide when to alternate signals based on the total traffic on each road detected by cameras. Secondly, the minor component consists of the ability to control the traffic signals by an android application throughout the wireless connection.

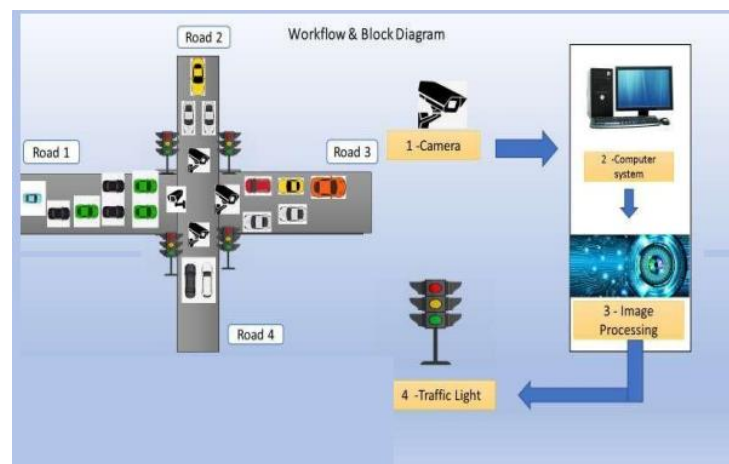


Fig.3 Work flow diagram

This proposed system data is transmitted by light using LED, of the vehicle. The light signal act as a transmitter and dashboard camera act as a receiver. Thus, this data can be used to assist drivers at the highway

to avoid accidents due to back-dash. The Wireless communication method is used for vehicle to vehicle communication; the module is utilized for recognizing any preceding vehicle which will initiate the process of automatic overtaking. Next Sobel edge detection method is used for edge detection. Pattern matching is used to recognize characters. Finally, based on the size of the numbers on the number plate in pixels distance between vehicles is calculated and compared with real distance with satisfying accuracy.

### III.CONCLUSION

This intelligent traffic control is more effective for controlling the high traffic areas. This paper uses the image processing technique for estimate the density of vehicles on the road. This technique uses Automatic number plate recognition for overtaking vehicles are focused. In this proposed system, sobel edge detection technique is used for each image are found and the number of vehicles on traffic areas.

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