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ROAD TRAFFIC LIGHT CONTROL USING IMAGE PROCESSING

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ABSTRACT:

The number of vehicles in India is increasing continuously. Indian scenario is the people are buying the vehicle as a symbol of good social status than the requirement. The increase in the number of the vehicles causes the problems of traffic jam along with the hazards to the environment. The sustainable development of any country needs the roads to withstand the heavy vehicles and increasing number continuously. Most of the times the traffic signals are found off or not working properly and hence there is a need of addressing the problem with the help of a smart system for traffic control. Authors have proposed the system for traffic control with the help of the image processing. The system can control the on and off time of the traffic signal as per the requirement of the traffic. The number of vehicles will be analyzed and the control is provided accordingly.

INTRODUCTION:

The traffic has become one of the severe problems in the modern world. The present infrastructure in the countries like India is unable to pass the present traffic and hence during the morning and evening peak hours many cities are facing the problem of traffic congestion. The present infrastructure development need the huge budget and also has to address the social issues like the rehabilitation of the people those are suffer due to infrastructure development as building the roads needs the space. The development of the countries leads to the increase in the number of vehicles. The government of India is continuously encouraging the people to use the public transport on the other hand people are finding it more comfortable to use the personal vehicles.

WAYS OF TRAFFIC CONTROL:

MANUAL CONTROLLING:

Manually controlled traffic is one of the famous and important methods implemented in the countries under development. It requires the huge manpower and the chances of the human errors are more in such systems. A person has to be continuously present for controlling the traffic at almost every junction of the country. Even if the person takes the break of ten minutes, the traffic will be uncontrolled during that time and hence there are the chances of congestion.

Fig. No. 1: Manual Traffic control

AUTOMATIC CONTROLLING:

With the use of the timers and the colored lights the traffic is controlled here at every junction. The constant time is pre set for every light to turn on and off and the system is designed. The system does not have any control on the number of vehicles present or not, the value of the on or off time should be set by the programmer and it will not be changed automatically.

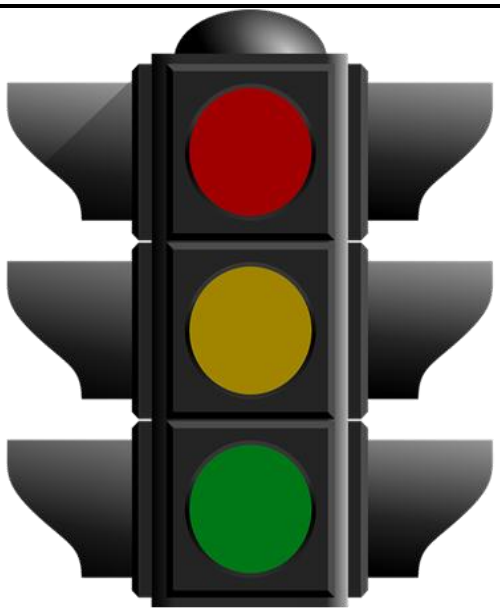

Fig. No. 2: General Traffic signals in India

IMAGE PROCESSING IN TRAFFIC LIGHT CONTROL:

The proposed system will be helpful for controlling the traffic with the implementation of the image processing system. The image processing will be useful for detecting the number of vehicles present at the junction of every side. As the number of vehicles increases during the peak hours, the system will automatically change the on and off time period of the signals. It helps in clearing the traffic effectively. When the traffic is less it, will reduce the timing of the systems and hence reduce the time being wasted.

Fig. No. 2: Traffic signals with CCTV cameras

METHODOLOGY:

Following are the steps involved

- Image acquisition
- RGB to gray conversion
- Image enhancement
- Image comparison

PROCEDURE:

- **PHASE1:**

Initially image acquisition is done with the help of camera first image of the road is captured, when there is traffic on the road at one of the side RGB to gray conversion is done on the reference image now gamma correction is done on the reference gray image to achieve image enhancement edge detection of this reference image is done thereafter with the help of Prewitt edge detection operator

- **PHASE2:**

Images of the road are captured. RGB to gray conversion is done on the sequence of captured images. The corrections are done in the image.

- **PHASE3:**

After edge detection procedure both reference and real time images are matched and traffic lights canbe controlled based on percentage of matching.

CONCLUSION:

The image processing is found one of the advantageous methods for controlling the traffic accurately. The image processing provides wide range of control for the traffic signals there by providing the real time check for the traffic. The traffic conditions in the underdeveloped countries are to be improved as the number of vehicles increasing continuously. The system reduces the waste of time, monitors the traffic and corrects the signal timings.

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