

# High Priority Vehicle Clearance and Intelligent traffic light control system

Prof. D. C. Shimpi<sup>1</sup>, Prof. M.P. Joshi<sup>2</sup>, Prof. R. V. Chothe<sup>3</sup>

*Electronics and Telecommunication Department, K.K.W.I.E.E.R, Nashik  
Maharashtra, India.*

**Abstract**-This paper has focused on the solutions to mitigate the problems of increasing traffic and problems arising through it. It includes three applications which will be working on basis of priorities. The first one will be for high priority vehicles in which the path which they wish to go at the traffic signal will turn green. The next one works on basis of density sensors, where the path having more traffic will be given maximum time duration of signal and the time of remaining paths will be varied according to traffic densities on it. The last application is for maintaining the rules in which the vehicles violating traffic rules at signals would be fined. The further scope in this system is by making the use of image processing technique which will help in getting the traffic density as well as to capture the information of vehicles violating traffic rules and also Google maps in order to get the information about traffic in particular region.

**Keywords**—IR Sensor ; RFID Tag and Reader ; Encoder and Decoder, RF Transmitter-Receiver

## I. INTRODUCTION

We are all well acquainted with the problem of increasing traffic congestion due to the increase in population. Due to the crowding of vehicles nowadays has led to many accidents, longer travelling times and increased vehicle queuing on signals even for necessary immediate transports vehicles like ambulance, fire brigade. In recent times, violating traffic rules have become predominant on Indian roads. The heartbreaking fact is that 16 people die on road accidents every hour in India and the Global status road safety 2013 has published a report on top 10 cities with the highest number of road crash death. And in 2015 it has become worse with death rate 130,000 annually. This is because people fail to obey the traffic rules since there is no enough security systems to enforce on problems like extending the speed limit, crossing the red signal So we have

developed some measures in our project to mitigate the problem of increasing traffic jam. The proposed system has total three applications which will be working on the High priority vehicles path clearance as some drivers fail to reach destination within time due to traffic and signals. So, here we have eliminated this problem by giving HPV first priority in signals. Also the signal timing is variable based on the density of vehicles on particular path. The path having maximum densities on it will be given more time duration and others also will be varied accordingly. This paper also focuses on the traffic signal rules so that the vehicles drivers not following the rules can be fined. This will led to maintenance of traffic rules at the signals.

## II. OVERVIEW OF THE SYSTEM

### A. HPV path clearance.

The driver on HPV will press switch when arrived at signal. The information will be given to transmitter. The RF signal will be received and decoded.



**B. Signal time variation .**

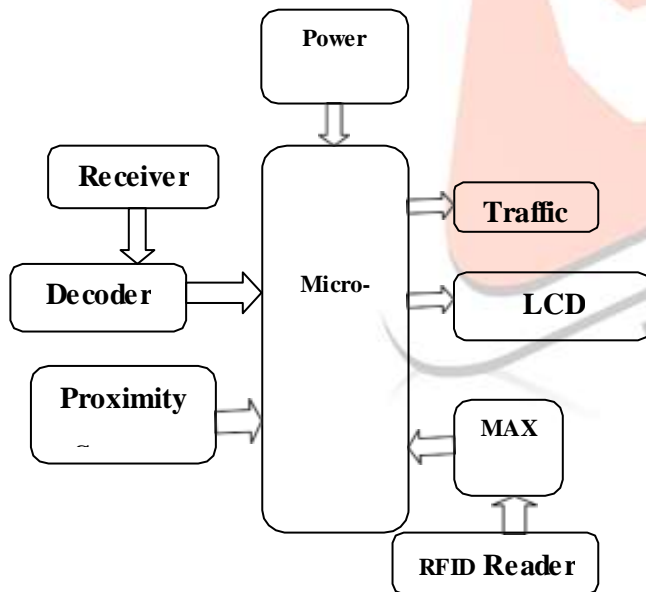
The time duration of signals will be varied based on densities on that path in order to maintain time management.

**C. Safety measures using RFID.**

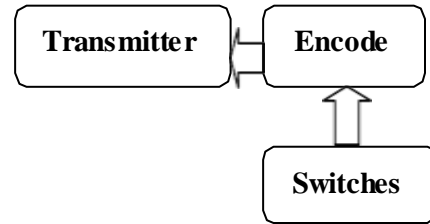
RFID tags are provided on number plates so that vehicle violating the rules would be fined. This will be done by detecting the RFID tag of those vehicles using RFID reads.



**III. BLOCK DIAGRAM**



**Fig. I: System on Vehicle**



**Fig .II : System on Ambulance**

PIC microcontroller is used in the proposed system in order to interface with all components included. The major part is proximity infrared sensors which will be used in order to calculate density of vehicles on different roads at signal. Infrared sensors will emit rays, and as soon as any vehicle hits the rays, the rays will be reflected back and with help of number of interruptions, the density will be calculated.

HPV Drivers will be having switches so that they could give the information of the particular path they have to go . With the help of transmitter , the information transmitted will be first encoded using encoder and will be sent to receiver. Receiver will send the encoded data to decoder and the original information will be given to microcontroller.

RFID reader will be used to read the RFID tag of vehicle, so that the vehicles crossing the zebra-crossing even when signal is red, will be detected and the RFID tag number will be sent to microcontroller.

Using the Timers of microcontroller, the time span of green signal is varied according to the necessity of that path as per the traffic on it.

LCD is used in order to the display the status of project to make it user friendly.

The working of the proposed system is priority based and on three applications with one traffic rule measure. First priority will be given to HPV for their path clearance . Secondly the density sensors will work for controlling the crowding and queuing of vehicles on signal.. One traffic rule measure is used in order to maintain the traffic rules so that none of the vehicle will cross the zebra-crossing when the signal is red

**V. SOFTWARE TOOLS USED**

1. Proteus is a software combination of ISIS schematic capture program. This is an integrated development environment. Tools in this suit are very easy to use for designing the circuit. It provides features such as fully Featured schematic capture, highly configurable design rules,

interactive circuit simulator, extensive support for power planes, and integrated 3D viewer.

2. Protel software that can help you to design printed circuit boards. It is completely freeware for personal or semi-professional use, limited to 800 pins. It is a flexible, easy to use CAD program, which allow you to realize your projects in a short time.

3. MPLAB is a proprietary freeware integrated development environment for the development of embedded applications on PIC microcontrollers, and is developed by Microchip Technology.

#### IV. CONCLUSION:

Increasing Traffic has created many problems. Through these applications, the traffic at signals would be channelized, thus, avoiding the crowding of vehicles. It will also provide flexibility to High priority vehicles and help in maintaining the traffic rules.

#### V. REFERENCES

- [1] Yilong Ren; Yunpeng Wang ; Guizhen Yu; Henry Liu; Lin Xiao “An Adaptive Signal Control Scheme to Prevent Intersection Traffic Blockage” , IEEE Transactions on Intelligent Transportation Systems , Pages: 1 - 10, Year: 2016
- [2] Maria-Dolores Cano; Ramon Sanchez-Iborra; Felipe Garcia-Sanchez; Antonio-Javier Garcia-Sanchez; Joan Garcia-Haro, “Coordination and agreement among traffic signal controllers in urban areas” , 18th International Conference on Transparent Optical Networks (ICTON) , Pages: 1 – 4 , Year: 2016
- [3] Yuguang Chen, Manrong Yuan, Wei Cheng, Haicheng Xiao, Huabao Ye “Coordinated traffic signal control method of urban expressway on-ramp and ground intersections” , 12th World Congress on Intelligent Control and Automation (WCICA) Year: 2016
- [4] Ahmad K. Aijazi, Paul Checchin, Laurent Malaterre, and Laurent Trassoudaine “Automatic detection of vehicles at road intersections using a compact 3D Velodyne sensor mounted on traffic signals” , IEEE Intelligent Vehicles Symposium (IV) , Pages: 662 – 667 , Year: 2016
- [5] Bilalghaza I; Khaled and Khaleb ; Khaled Chahine; Mohamad Kherfan “Smart traffic light control system” 2016 Third International Conference on Electrical, Electronics, Computer Engineering and their applications (EECEA) Pages: 140-145 Year: 2016