Real Time Traffic Signal Time Operating and Ambulance Preference

Yuvraj Tryambake[1], Sayali Kolhatkar[2], Vidya Gawade[3], Komal Yende[4], Chetan Taware[5]
Department of Computer Engineering
[1, 2, 3, 4, 5] H.S.B.P.V.T College of Engineering, Kashti

Abstract-*The main object of this study was to design and implement a suitable system for an intelligent traffic signal. The developed system is able to sense the presence or absence of vehicles within certain range by setting the appropriate time period for the traffic signals to work accordingly. Current traffic signals have fixed amount of time. It does not check any conditions which is vehicles are available or not and if not then signal wait up to its time over. So we need to change such type of system like if vehicle are not available in current green signal road then signal control automatically transferred to next signal. So in this way we minimize waiting time and provide some fast process.*

Keywords- RFID, IR Sensor, Arduino Board, Bluetooth Module HC-05.

I. INTRODUCTION

With the tremendous growth of the urbanization, industrialization and population, there has been a massive growth in the traffic. With massive growth in traffic, there is occurrence of many problems too; these problems include accidents, traffic jams and traffic rule violation at the traffic signals. Traffic lights plays an important role in traffic management. Traffic lights are signaling devices that are placed on the intersection points and used to control the flow of traffic on the road. Most of the traffic lights around us follow a predetermined timing circuit. Many time the vehicles on the red light side have to wait for green signal even though there is no traffic. It results in the loss of most valuable time. The traffic signal system consists of three parts. In first part the controller, which represents the brain of the traffic system. The second part includes the signal visualization or signal face. Signal faces are part of a signal head and provided for controlling traffic in a single direction and consist of one or more signal sections. It usually consists of solid red, yellow and green lights. The third part contains the sensor or detector. The detector is a device to indicate the presence of vehicles.

Today's traffic condition .

II. RELATED WORK

A.D.Jadhav :proposed an "Intelligent Traffic Light Control System" which aims at reducing the delay on roads by reducing the amount of traffic. In this paper they analyze the flow of traffic on each road along with the signals and also assign time period to glow the respective signal light .This system tries to minimize the traffic jams by clearing the road with higher density of vehicles . The road with more traffic density then other roads will be assigned with a green signal and all other with red signal. This paper focuses to minimizes traffic congestion on roads which output in long waiting times, loss of fuel and money.

Sivakumar.R, Vignesh.G, Vishal Narayanan, Prakash.S, Sivakumar.V: proposed an "Automated Traffic Light Control System and Stolen Vehicle Detection" proposes a machine controlled Aggregation of vehicles (traffic) power to direct system that smartly used to avoid crowding of vehicles, ambulance headway and detection of stolen vehicle. Each transport vehicle is furnished with (RFID'S) Radio Frequency Identification tag to ascertain in Aggregation of vehicles (traffic) signal.

Ruthvik Gautham,: proposed an Automated Traffic Signal which provides a smooth flow to Ambulance by introducing a dynamic traffic signal. This paper provides smooth flow to ambulance. The traffic density on each road

will be measured by using RFID Readers to count the number of vehicles.

Gajanan P. Dhok, Sarika B : exploit the emergence of new technology called as Intelligent traffic light controller, This makes the use of sensor n/w along with embedded technology. Where traffic light will be decided based on the total traffic on all adjacent roads. Thus optimization of traffic light switching increases road. Capacity, traffic flow and can prevent traffic congestions.

Hardware Implementation:

RFID[Radio Frequency Identification]:

This technology provides an object tagged recognition which will support the dynamic traffic signal . It is a technique that uses the radio waves to identify the object uniquely. RFID system consists of a Reader and one or more Tags. The RFID tags consist of 12 digit unique code is used to identify the objects uniquely. The tags can be classified as active or passive; in our system we use passive tags because of its long life and ease of maintenance.

IR Sensor [Infrared sensor]

An IR sensor is an electronic device which is used to sense object of its surroundings by either emitting and/or detecting infrared radiation. IR sensors are also capable of measuring the heat being emitted by an object and detecting motion.

Arduino Board:

Arduino is a computer hardware ,software company, project, and user community that manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. Arduino boards are accessible commercially in preassembled. The Arduino project provides an IDE (integrated development environment) based on the Processing language project.

Bluetooth module:

Bluetooth is a wireless technology for exchanging data over short distances from fixed and mobile devices, and building PANs (personal area networks). Range is approximately 10 Meters.

HC-05 is more capable module that can be set to be either Master or Slave.

HC-06 is Slave only device. It looks physically like the HC-05.

III. PROPOSED SYSTEM

In the proposed system, we aim at providing an efficient traffic management scheme which provides priority to Ambulance & helps to control heavy traffic .The operation of Automated Traffic Controller is as shown in the Figure .

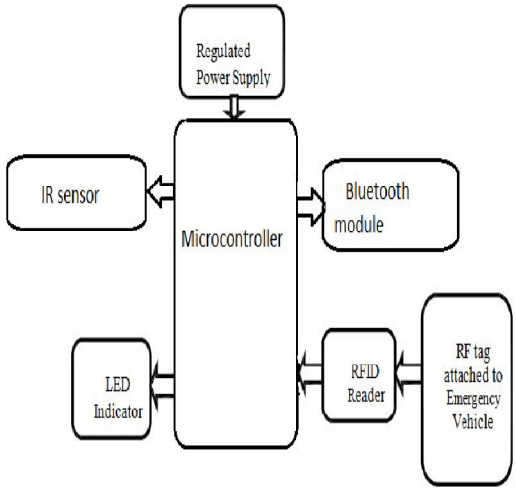

Fig 1: Block Diagram of Proposed System

The proposed system is implemented for a multilane traffic junction and the operations are carried out using Microcontroller which is the Heart of the system. The whole setup consists of Arduino board, RFID , IR sensors , Bluetooth module and Android mobile application for identifying the ambulance and providing automatic traffic management. Initially, the traffic signals are programmed in all the areas in order to change from red to yellow, yellow to green and green to red within particular time interval. When one face is green, all the signals in other faces are in red.

Using the RFID system the traffic problems that usually arise with standard traffic control systems can be avoided. We set IR sensors beside a road. This sensors sense the vehicles and send signal message to the arduino board. Then arduino board takes smart decision about traffic signal and send current system status on Android Mobile Application via bluetooth module.

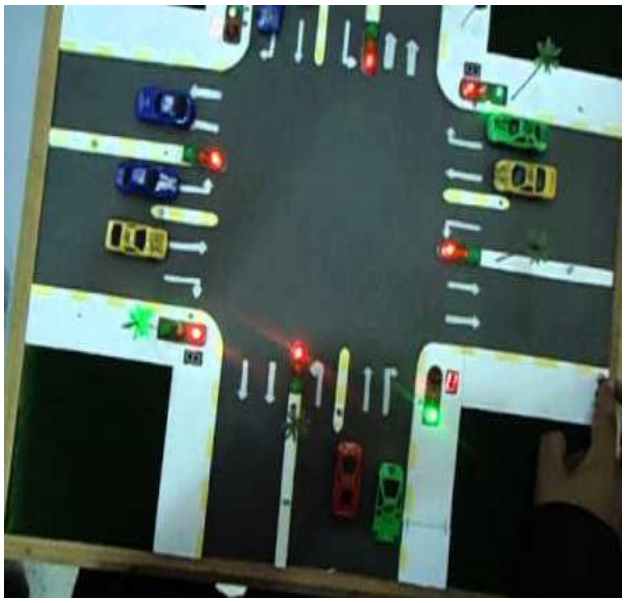

Fig : Proposed system

IV. CONCLUSION

This system is a RFID based traffic controlling system which is a real time application. It will manipulate the signal timer according to the density of vehicles and hence manage the traffic flow . It will Sense all vehicles in every lane and the system to work fast and efficiently in real time. Also the signal timer scheduling will be done very effectively thus controlling heavy traffic and will consider Ambulance vehicles like ambulances and firebrigades, giving them priority to go. Thus, this system will be very usefull to manage heavy traffic in metropolitan cities.

REFERENCES

[1] Ms Promila Sinhmar, “Intelligent Traffic Light and Density Control using IR Sensors and Microcontroller”, International Journal of Advanced Technology & Engineering Research (IJATER) ISSN NO: 2250-3536 VOLUME 2, ISSUE 2, MARCH 2012.

[2] A.D.Jadhav, Bhor Madhuri, Thakre Ketan, Intelligent Traffic Light Control System proceedings of 4th IRF International Conference, ISBN: 978-93-82702-66-5,16th march 2014.

[3] Vasuki Shankar, Ruthvik Gautham, Vedaprakash Varma, Automated Traffic Signal for Hassle Free Movement of Ambulance ,pp 1-5 2015 IEEE Conference Paper 2015].

[4] N. M. Z. Hashim,, A. S. Jaafar, N. A. Ali., L. Salahuddin, N. R. Mohamad and M. A. Ibrahim, Traffic Light Control System for Ambulances Using Radio Frequency, IOSR Journal of Engineering, Vol. 3, No. 7, pp. 43-52, 2013.

[5] K.Sangeetha et aI., "Automatic ambulance rescue with intelligent traffic light system", IOSR journal of engineering (IOSRJEN), vol.4, Issue 2, February 2014

[6] Gajanan P. Dhok, Sarika B, Embedded System for Intelligent Ambulance and Traffic Control Management International Journal of Computer and Electronics Research, volume 2, issue 2, april 2013

[7] Sonali Sharma1, Ajitesh Kumar2, Randheer Kumar Singh,” Real-time Auto Controllable Traffic Management System”, Journal of Basic and Applied Engineering Research October, 2014.