

SMART TRAFFIC LIGHT CONTROL SYSTEM USING WIRELESS COMMUNICATION

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Abstract

The system is designed to elaborate a density based on effective traffic signal system. This project is used to manage the traffic automatically. The IR sensor is arranged in the particular distance of road divider. Every IR sensor outcome is prescribed to the traffic junction unit, which resolve the level of traffic, based on these levels traffic signals is controlled. If emergency vehicles are recognized, traffic junction unit gives first preference to the emergency vehicles and controls the corresponding road side of traffic unit. If accident is occurs in any path of the road, the information is transmit to the traffic control unit. Our suggested system will help to manage the traffic in real time.

Keywords:

Microcontroller, IR(infrared) sensors, piezo electric sensor, Digital display.

Introduction

A Traffic Monitoring System is the most crucial element in the Intelligent Transportation Systems, primarily in a growing country. Traffic is a very major problems in future. The common traffic system utilizes steady signaling times at a junction and does not provide any important to emergency vehicles such as ambulance, fire engines and VIP cars. Accident that occur at intersections of roads are due to

some failure in traffic signal system and drivers knowledge. As in day to day life while travelling one must have faced the problem of traffic congestion. This result is avoiding excess delay, promote safety measure and reduce pollution in the cities.

Literature Survey

[1].In all there are four signals which consist of red, green& yellow led's at each of the lane of cross road. Out of four signals, first signal green led is lit up and rest all other are red and at that time first barrier is lifted down and all other are lifted up and vehicle of first lane are allowed to move. After a predefined interval of time, second signal green led is lit up and rest all other are red and at that time second barrier is lifted down and all other are lifted up and vehicle of second lane are allowed to move. Again after a predefined interval of time, third signal green led is lit up and rest all other are red and at that time third barrier is lifted down and all other are lifted up and vehicle of third lane are allowed to move. Lastly for a predefined interval of time, fourth signal green led is lit up and rest all other are red and at that time fourth barrier is lifted down and all other are lifted up and vehicle of fourth lane are allowed to move. . This is a endless process which goes on with a predefined time delay for each lane in clockwise direction [2]. Each road is divided into three sectors as low , Medium and High

traffic density sector. At the beginning of medium and high density sections, sensors are mounted to show the respective traffic situation on a road and to assign appropriate green light time to individual road. When density of traffic is measured by IR sensors mounted on each road, system gives lack interval of time to each road in conformation with the traffic density on it to clear its traffic by making green light ON for that road. This normal operation continues until override signal occurs. When override signal occurs system halts its normal operation and starts executing the override signal and again comes back to the normal operation after execution. This helps the emergency vehicles like ambulance, fire-brigade etc. on any road to pass the signal without unnecessary waiting for the signal to be turn green for a road it is on. [3]. The traffic lights that are in widespread use today do not do much intricate reasoning when deciding when to change the lights for the various road users waiting in different lanes. How long the signal stays green in one lane and red in another is most often determined by simple timing that is calculated when the crossing is designed. Even though today's methods are robust and work well when the traffic load is distributed evenly across the lanes in the intersection, the systems are very inefficient because they are unable to handle various simple situations that arise throughout the day. Unnecessary waiting time in the signal can be avoided by determining in which side the green signal should be large during the traffic. [4]: This unit consists of PIC microcontroller, motor, GSM, speed sensor, RPS, LCD display for rapidity control and another LCD display to display RC number and then shifting RFID tag. Traffic unit is the composite of traffic junction unit and RTO unit. In traffic junction unit it consists of PIC microcontroller, GSM, RPS, Traffic light driver. Active RFID reader is used to read

all the specifics about user's document that has been loaded in RFID tag immediately in the vehicle unit. GSM used in this unit acts as both transmitter and receiver since it sends information to user and RTO vice-versa. In RTO UNIT it consists of PIC microcontroller, GSM, RPS, RTC, MAX232. Here GSM is used as transceiver it transmits messages to user in case if they violate the traffic rules and during rash driving. It receives messages from traffic junction unit about user's document

Existing System

Here we existing method that produces the signals construct on density or depend on the most of vehicles in road. In the normal time of the road brings the traffic congestion and gets people frustrated. This kind of signal process is incorporated in major cities. This process is to abstract and restrict the traffic easily. Number of vehicles on the road is calculated by using infrared ray sensors; these IR sensors are situated on further sides of road. The sensor output is stated to microcontroller then this information is handled in it. Thus, sustained on number of vehicles in traffic as per the timing of traffic lights are suitably lay. The ultrasonic sensors are used to identify any impact and it notify the alarm and remind the message.

Proposed System

As per our proposed system if a vehicle has done with accidents, immediately an information will be sent to a traffic control unit. Information passed through the traffic control unit by a wireless transceiver, as per our project that accidents occur in traffic density region by placing a piezo electric plate under a car. So due to a large pressure variations occur in vehicle we can note down there is some accident been occurred. A wireless receiver placed over there describes as a RFID reader and

rfidtag,now looking that our project that ,how it works reader sends a radio waves and where rfid tag is placed in a vechiles.signal generator sends radio waves and radio tags sends back radio waves,which is received by receiver/signal dectector with a help of pic microcontrller.frequency of operation used at a high frequency at 13.56MHZ ,which is covering a distance of up to 1METER.From the traffic control unit, a information is sent to the nearby emergency vechicle. information is passed through by means of signals between a accident and traffic junction unit..where later according to a need of accident vehicle, emergency vehicle. is called off..againa entrance of emergency vechicle. is noted down by placing a RFID tag on it.then there is a imparting between a traffic junction unit and emergency vechicle. The signal to Traffic signal section is transmitted through RF communication. Also if anyfire occurs, it is detected using fire sensor and an alarm message is directly sent to the fire station.

BLOCK DIAGRAM

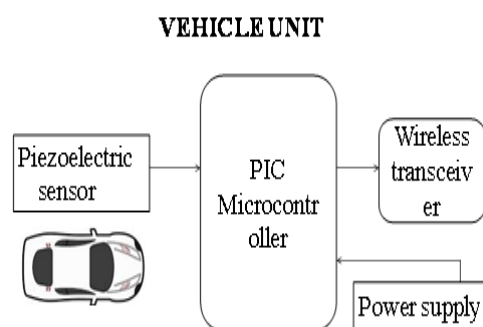


FIG 1:ACCIDENT UNIT

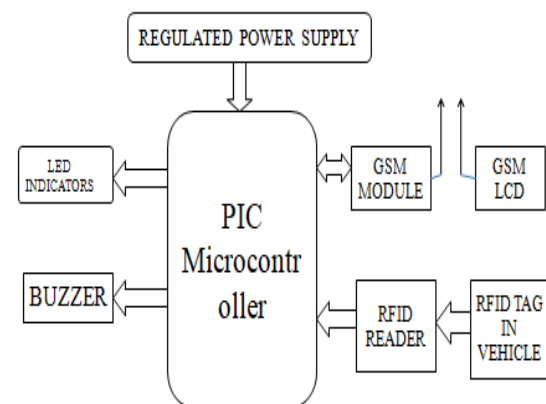


FIG 2: EMERGENCY UNIT

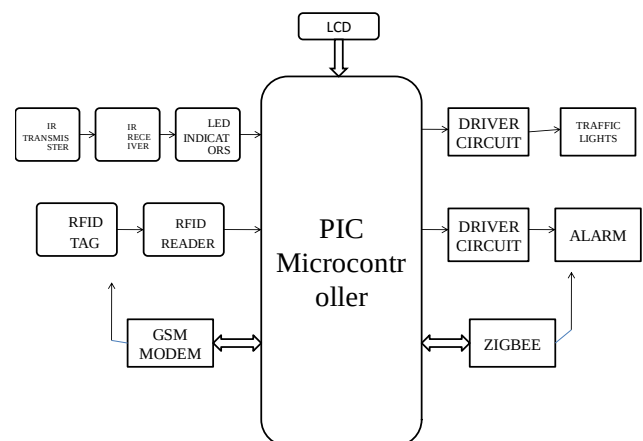


FIG 3:GENERAL BLOCK DIAGRAM

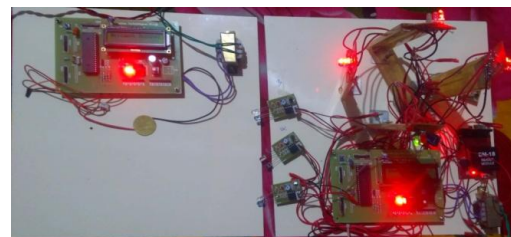


FIG4: FINAL OUTPUT

Conclusion

In this paper, a basic idea is accomplished by supervising the traffic signals in approval of emergency vehicle during the accidents. With this system the emergency vehicle can be moved freely even never an accident occurs in traffic density region. Even VIP vehicles can be easily given way during a pass over of an important person at that particular area, it would be very efficient. This system can be over suitable over a large population countries like INDIA, CHINA ETC., and it could be more accurate, so we can avoid a loss of time in any circumstances. There won't be any kind of delay or miscommunication in between a RFID reader and RFID tag. Only way a delay can be happen through a GSM module placed over there, because it is based on a queue method, which even can be reduced or decreased by giving a higher priority on most traffic occurred region.

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