



AUTOMATIC AMBULANCE RESCUE WITH INTELLIGENT TRAFFIC LIGHT SYSTEM

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ABSTRACT:

The road accident in the present era is increased to greater extent. The loss of human life due to accident must be avoided. Traffic congestion and tidal flow are major facts that cause delay to ambulance. In order to save human life from accidents we introduce a scheme called ITLS (Intelligent Traffic Light system).The main concept behind this scheme is to provide a smooth flow for the emergency vehicles like ambulance to reach the hospitals in time and thus minimizing the delay caused by traffic congestion. With the help of this Intelligent Transportation System integrated with the GPS the current scenario of traffic congestion can be solved to an extent. This scheme is fully automated controls the traffic lights, helping to reach the hospital in time. Here we track the ambulance location using GPS units, and its sends the data to the traffic lights through embedded system .This system control the traffic lights and save the time in emergency periods.

Keywords: ITLS, RF, GPS, IOT.

I.INTRODUCTION:

Emergency occurs anywhere at any location, at any time, and in various .Ways will make one at risk. These situations require a speedy response. With the increasing number of population in the metropolitan areas already existing problem of poor traffic congestion has grown to an alarming event. The prior importance is given to the Ambulance and other emergency vehicles which needs to wait longer time on the traffic thereby increasing the probability of risk. Transportation of a patient to hospital in emergency seems quite simple but in actual it is pretty difficult during peak hours Recovery action should be taken immediately.Theolder technology uses RF transmitter mounted on atop of the ambulance and RF receivers are placed in every road leading to the signal at a suitable distance from the traffic signal. Initially the driver of the ambulance switches on the transmitter through a switch placed on the steering wheel. This makes the receiver output to go high and thereby interrupting the microcontroller. In order to tackle these problems, this paper has come up with a proposed system using the

Advanced GPS Technologies for faster data transmission. The ambulance is controlled by the Control Unit and also controls the traffic light according to the ambulance location and thus reaching the hospital safely.

II.EXISTING METHODOLOGY:

Traffic is a critical issue of transportation system in most of all the cities of Countries. This is especially true for Countries like India and China, where the population is increasing at higher rate. For example, Bangalore city, has witnessed a phenomenal growth in vehicle population in recent years. As a result, many of the arterial roads and intersections are operating over the capacity (i.e., v/c is more than 1) and average journey speeds on some of the key roads in the central areas are lower than 10 Km/h at the peak hour. Some of the main challenges are management of more than 36,00,000 vehicles, annual growth of 7–10% in traffic, roads operating at higher capacity ranging from 1 to 4, travel speed less than 10 Km/h at some central areas in peak hours, insufficient or no parking space for vehicles, limited number of policemen. Currently video traffic surveillance and monitoring system Commissioned in Bangalore city. It involves a manual analysis of data by the traffic management team to determine the traffic light duration in each of the junction. It will communicate the same to the local Police officers for the necessary actions. Traffic Signal Controllers are the electronic equipment kept at the junction to control duration of traffic signals. The controllers are designed using microprocessor based control circuits, and can be operated in any one of the following modes e.g. Fixed Time mode, Demand Actuated Mode, Forced Flash Mode etc. Now the new existing system limited to only one road of the traffic junction. In this project we have extended to multi road junction.

DISADVANTAGES OF EXISTING SYSTEM:

In the existing system it involves the manual effort to control the traffic systems. The normal traffic signals systems increase the time of travel, thus be notable as one of the major issues in metropolitan cities. Emergency vehicles like ambulance and fire trucks. Need to reach their destinations as the earliest. If they spend lot of time in the traffic jams, valued lives of many people may be in danger.

- Present system is completely a static case
- Vehicles must wait at the intersection for a predefined time until microcontroller switches
- Green light for that lane.
- Exists no process of pre-emption.
- No green light service for priority based vehicles.

From the past decades, management of traffic has been one of the biggest issues of modernization. Researchers have followed a long way to overcome the traffic crises. Right from the very beginning of “Manual Traffic Control” in which man power was required to control the traffic. Depending on countries and states the traffic polices are allotted to different areas to control traffic. These men carry sign board, sign light and whistle to control the traffic. They are instructed to wear specific uniforms in order to be easily identified by the drivers.

After this came the traditional “Vehicle Actuated Control System” in which, lights are loaded with constant numerical value in the form of timers. The lights are automatically getting ON and OFF depending on timer value changes. The main disadvantage is that the algorithm for this control system does not change the green signal even if the traffic has already passed until the counter is complete, while not taking into account the number of vehicles waiting at red.

III.PROPOSED METHODOLOGY:

This system is designed to overcome the disadvantages in the existing system. Now we are extending the existing system to the Multi-road junction. Here it contains four ways named as way1, way2, way3, way4. From the current problem section it can be seen that, existing technologies are insufficient to handle the problems of congestion control, emergency vehicle clearance, stolen vehicle detection, etc. To solve these problems, we propose to implement our Smart Traffic Control System.

3.1. AMBULANCE UNIT:

Ambulance collects the victim from the accident location. While in the ambulance the vital parameters of the patient temperature and pulse rate are continuously monitored and conveyed to the concerned hospital. The Arduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 on the Arduino Uno comes preburned with a boot loader that allows you to upload new code to it without the use of an external hardware programmer. We are using LM35 temperature sensor whose output voltage is linearly proportional to the Celsius (centigrade). For measuring pulse rate we are using IR based obstacle sensor. The output from the sensors is given to the microcontroller. The details of the patient that are detected in the ambulance unit are uploaded in the server through IOT/CLOUD. IoTCloud is a platform from Salesforce.com that is designed to store and process InternetofThings (IoT) data.

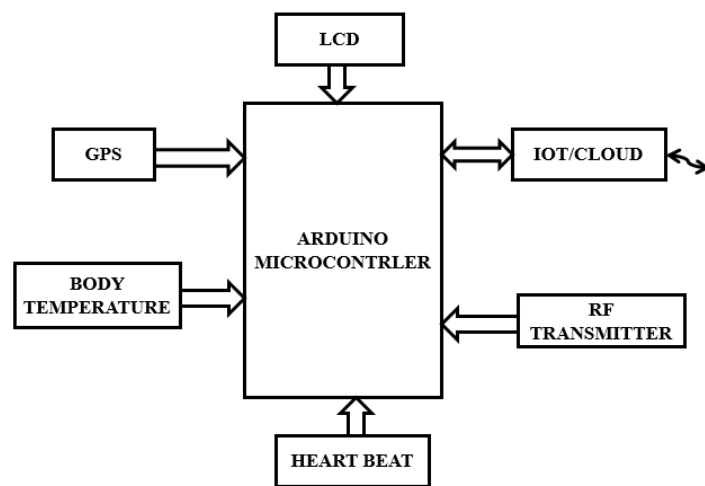


Fig.3.1.Ambulance Unit

The platform is built to take in the massive volumes of data generated by devices, sensors, websites, applications, customers and partners and initiate actions for real-time responses. Normally there is delay in ambulance reaching the hospital due to traffic congestion. To overcome this delay, the traffic signals in the path of ambulance are controlled via RF communication. The ambulance section consists of an RF transmitter and the traffic unit will consist of the RF receiver. The RF transmitter on the ambulance will communicate with the RF receiver of the signal section and make the signal green whenever it is within a 250 radius. As a result of which the ambulance will have a clear path all along its way to the hospital without any traffic congestion. GPS installed in the ambulance to locate the location of the ambulance at a greater speed and at greater coverage.

3.2. TRAFFIC UNIT:

Whenever the ambulance reaches to the traffic signal (approximately 10m) the traffic signal will be made to green through RF communication. Thus the ambulance will have clear path to reach the hospital without any traffic congestion along the way. This system is fully automated controls the traffic lights, helping the victim to reach the hospital in time. Once the ambulance reaches the coverage area the receiver will detect the RF transmitted signal from the transmitter. Radio-frequency engineering is a subset of electrical engineering that deals with devices that are designed to operate in the radio frequency (RF) spectrum. These devices operate within the range of about 3 kHz up to 300 GHz. The detected signal will be sent to the microcontroller in order to change the traffic signal to green for smooth flow of ambulance. of electrical engineering that deals with devices that are designed to operate in the radio frequency (RF) spectrum. These devices operate within the range of about 3 kHz up to 300 GHz. The detected signal will be sent to the microcontroller in order to change the traffic signal to green for smooth flow of ambulance.

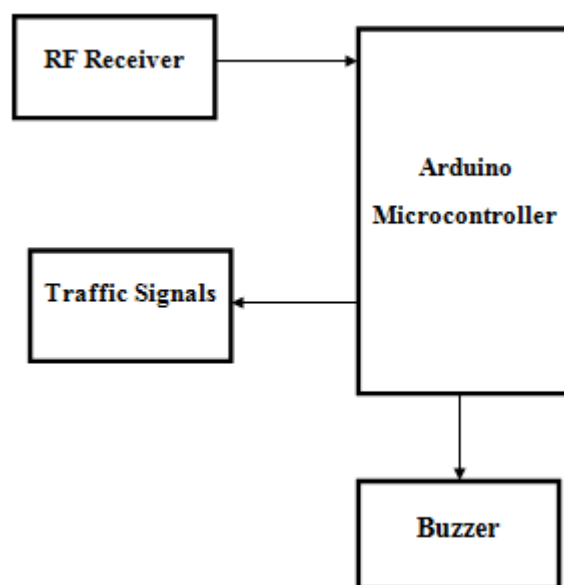


Fig.3.2.Traffic Unit

3.3. HOSPITAL UNIT:

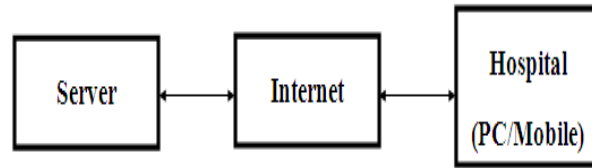


Fig.3.3.Hospital Unit

Now-a-days Health care Environment has become technology oriented. The patients' details are continuously monitored in the ambulance and are updated in server and they could be monitored from hospital. The patient details uploaded in the server are monitored in the hospital by using unique login id and password.

IV.RESULT:

Thus we have developed the above mentioned units and successfully coordinated the system. For the main server unit we have created a database using visual basic 6.0 on PC. For the prototype the communication between the ambulance and traffic unit takes place via RF transmitter and RF receiver.

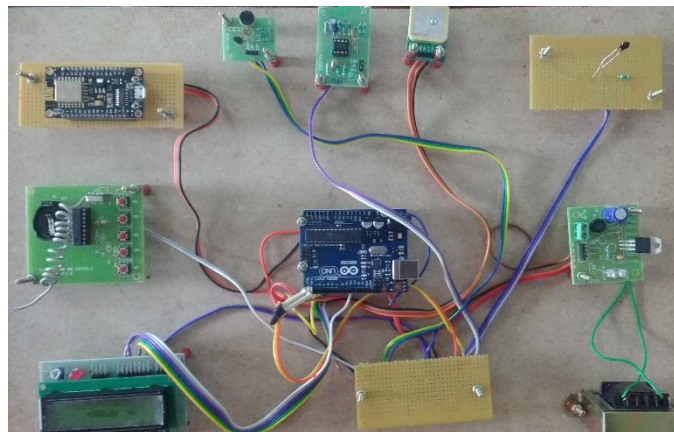


FIG: 1.AMBULANCE UNIT

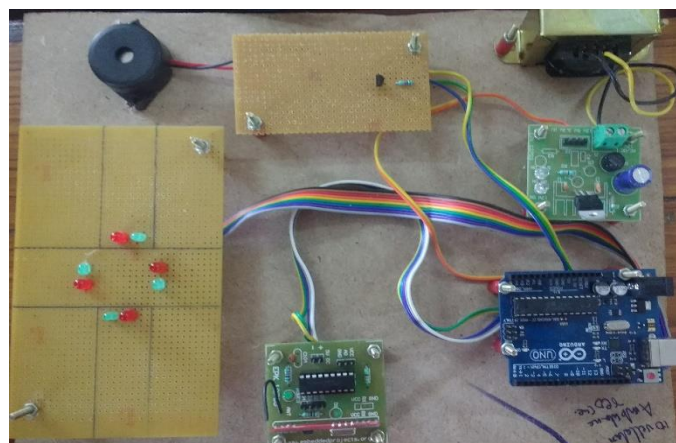


FIG.2.TRAFFIC UNIT

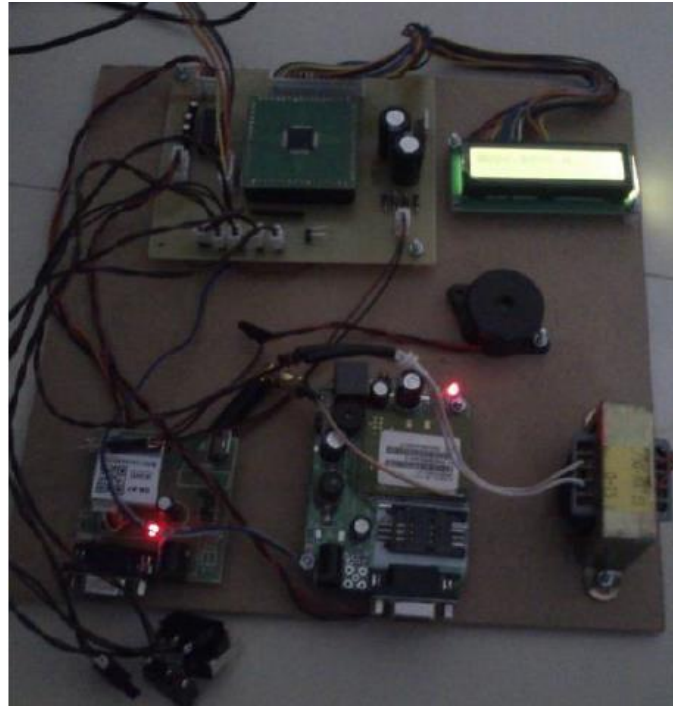


FIG.3.AMBULANCE RESCUE SYSTEM

Figure 3.Indicate the overall rescue system including the ambulance section and the traffic section

V.CONCLUSION

Thus we have presented a system to give a clear way to emergency purpose vehicles on road so that they can reach their destination in least time without stopping at traffic intersection. This system can be effectively implemented for an entire city or countries with large population like India for better results. Human life is precious and must follow.Safety measures very conscious in all aspects this of course includes ambulances services too. In this, by using intelligent ambulance system we can achieve the uninterrupted service of the traffic control system by implementing the alternate methods for signal change to allow flow control. The accuracy of the RF is more than Camera's so our proposed paper also improves the performance of traffic light Violation Detection System. This system is cost effective, multiple usages and deployed using trending IOT, which is more efficient. This system will reduce accidents which often happen at the traffic signal intersections because other vehicles have to huddle to give way to the ambulance services. This life saver project must be implemented in the traffic forums to aid the public in good manner.

REFERENCES

[1].Mr.S.Iyyappan and Mr.V.Nandagopal, 'Accident Detection and Ambulance Rescue with Intelligent Traffic Light System', published in International Journal of Advanced Technology and Engineering Research, 2013.

- [2].K.Athavan, S.Jagadeeshwaran, G.BalasubraminanN.Dinesh, G.Abhilash, G.Gokul —Automatic ambulance rescue System, Proceedings of 22nd IEEE International Conference on Tools with Artificial Intelligence, pages: 190-195, 2012.
- [3]. AmneshGoel,Sukanya Ray, Nidhi Chandra, —Intelligent Traffic Light System to Prioritized Emergency Purpose Vehicles based on Wireless Sensor Network ,published in International Journal of Computer Applications , Volume 40– No.12, February 2012 .
- [4]. Wang Wei, Fang Hanbo, —*Traffic accident automatic detection and remote alarm device*, Proceedings of IEEE International Conference on Electric Information and Control Engineering, pages: 910-913, 2011.
- [5] Dr. A. Balamurugan¹, G. Navin Siva Kumar², S. Raj Thilak,³ P. Selvakumar ⁴HOD Professor,Sri Krishna College of Technology," Automated Emergency System in Ambulance to Control Traffic signals using, IOT “.
- [6] Pratyush Parida¹, Sudeep Kumar Dhurua ².P. Santhi Priya‘An Intelligent Ambulance with Some Advance features of Telecommunication’.

