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AN ADVANCED AMBULANCE RESCUE SYSTEM USING PRIORITIZED PHOTOVOLTAIC ROAD STUD INDICATION AND TRAFFIC SWITCHING

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Abstract: Now days the road accidents are increased to uncertain level in rural and urban areas. With the help of this system we can avoid loss of human life. Traffic congestion and tidal flow are major facts that cause delay to ambulance. The main theme 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. We use RF transmitter it is placed in traffic signal and photovoltaic road stud side. Then here we have use Radio Frequency Communication between ambulance and RF transmitter. The ambulance is controlled by the control unit that furnishes adequate route to ambulance and conjointly controls the spotlight in step with the ambulance location and therefore reaching the hospital safely. The Buzzer Alarm is fixed in Traffic light and Photovoltaic road stud side it indicates while ambulance enters the certain region.

Keywords: Buzzer, Road stud, Traffic light, RF Transmitter and RF Receiver.

1. INTRODUCTION

Across the world a traffic congestion is over growing as increasing rate of population, automobiles usage is proportional to increases without any road infrastructure development. At every traffic junction, there will be a chance of high accumulation of vehicles and during rush time it concludes in high congestion compared to normal hours. Because of these situations which creates complexities for flow of ambulance in busy- hours and it raise to putting person who are having need of ambulance into critical stage. So, to erase this issue a research on different technologies are done and explored in order to monitor emergency vehicle and control traffic flow introducing green corridor technique. These technologies will have high maintenance and installation complexities etc. So, this paper we introduced a model for implementing green corridor using Radio Frequency Technology. This technology is achieved by communication through RF modules are RF Transmitter attached to emergency vehicle and RF Receiver will be installed nearer to the signaling system.

1.1 PROBLEM STATEMENT

In today's busy world even it increase of vehicles growth, traffic signals are programmed and still running on fixed timers which will does not vary based on the volume of vehicle accumulation at junction as well as in rural areas, Highways etc. Due to this situation there will be a chance of increased waiting time for the ambulance. As no provisions are available with present traffic monitoring system forgetting any information about Ambulance. Because of this it will be come very difficult to control signals and traffic for the effective operation of ambulance. So, it creates complexitiesin emergency situations to minimize delay time of emergency vehicle and may put lives at risk.

2. EXISTING SYSTEM

In the existing system, it furnishes the adequate route to the ambulance and the traffic signal is controlled by the control unit. But when the road is having heavy traffic without the traffic signal, in that place the ambulance is delayed to reach the hospital. So that also, there will be a loss of human lives.

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2.1 DRAWBACKS

System fails when central server crash. The alarming system is present only in areas having traffic signals. Traffic signals are mostly present only inside the city. Thus, when ambulance is on rural areas the same problem exists.

3. PROPOSED SYSTEM

By placing a RF module in road studs along with buzzer will bring a solution to this problem. RF receiver is placed some meters apart from the ambulance to make indication. Thus, when ambulance reaches the RF receiving limit of Traffic signal, the roads ahead will be alerted by studs as well as the traffic will be cleared. This will be of great help even in places without traffic signals like national highways where accident zones are prominent and need of rush is more.

4. CLASSIFICATION OF SYSTEM

Thus, the proposed system is divided into following three units on basis of Transmitter and Receiver.

4.1 THE AMBULANCE SECTION.

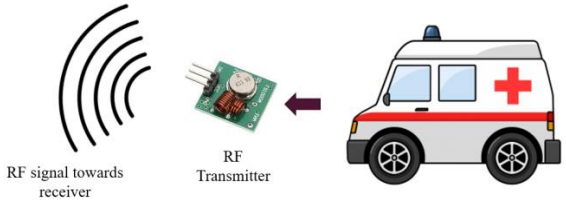

Figure 1: The Ambulance Transmitter Section

From the Ambulance, microcontroller with the RF transmitter will send signal to the traffic signal system and the road stud to make prior indication.

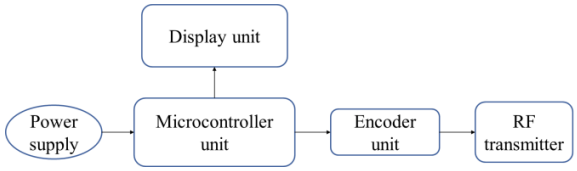

Figure 2: Block Diagram of Ambulance Section

4.2 THE TRAFFIC LIGHT SECTION

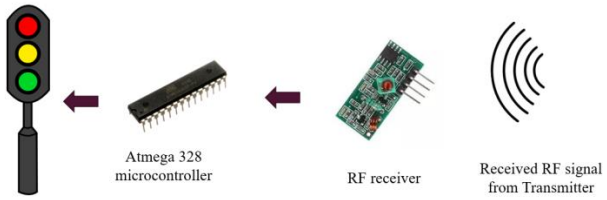

Figure 3: Receiver Section (Traffic Light)

With received signal, this unit is controlled by the Node circuit (The Traffic Junction) and it furnishes the adequate route to the ambulance.

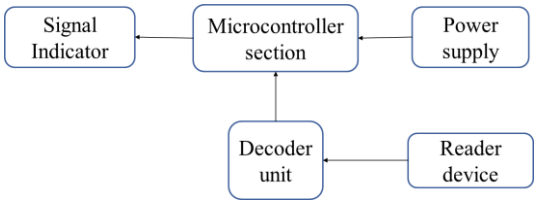

Figure 4: Block Diagram of Traffic Light Section

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4.3 THE PHOTOVOLTAIC ROAD STUD.

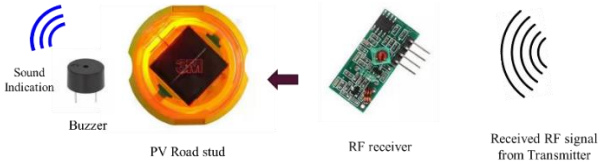

Figure 5: Receiver Section (Road Stud)

At some meters apart from the ambulance, RF receiver in the Road stud will receive the signal to make Buzzer sound.

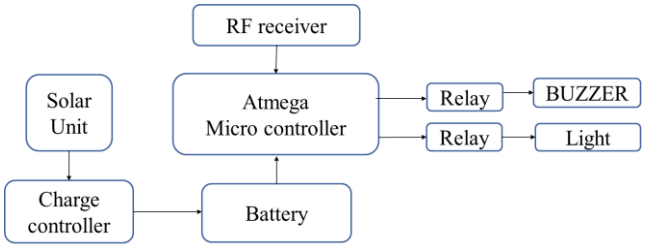

Figure 6: Block Diagram of Road Stud Section

5. ADVANTAGES

- Less time consumption.
- Fast rescue system
- Easy reaches the accident spot.

6. SYSTEM ARCHITECTURE

7. System architecture describes the solution with absolute planning for a problem. After proposing a system with specifications, designers will employ for designing a solution which includes both hardware and software tools for implementation. System architecture will describe the algorithm and flow chart implementation of system as follows.

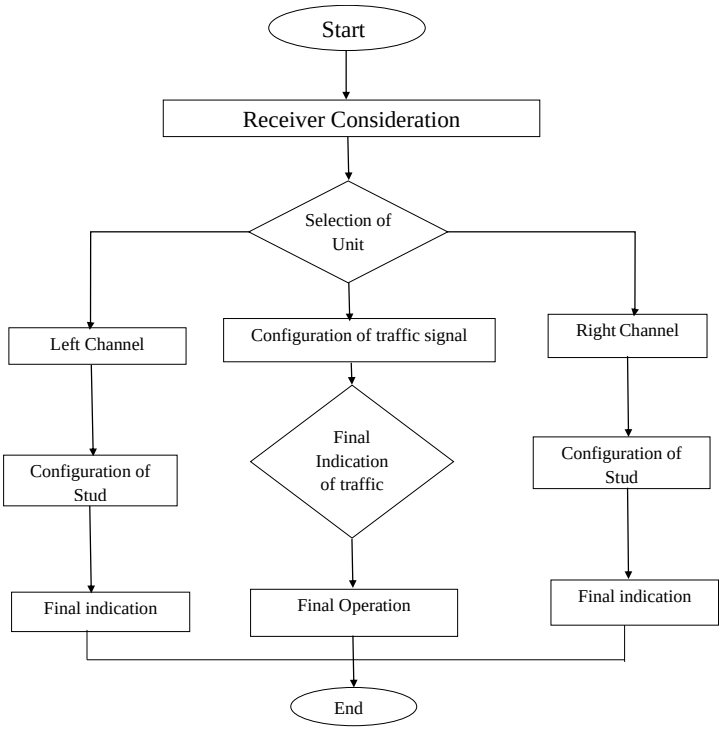

Figure 7: Flow Chart of System

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8. RESULT & DISCUSSION

Implementation and working of proposed ***"An Advanced Ambulance Rescue System Using Prioritized Road Stud Indication and Traffic Switching"*** is analyzed and evaluated with on-board display. In the proposed system, the ATmega328P microcontroller is controlled by control unit of traffic light control. The RF system identifies the ambulance and sends signal to the microcontroller. Upon receiving the signal, the microcontroller operates the green light for the ambulance as well as make indication of Road Stud. The operation of different working modes are observed and receiving of message in the micro controller.

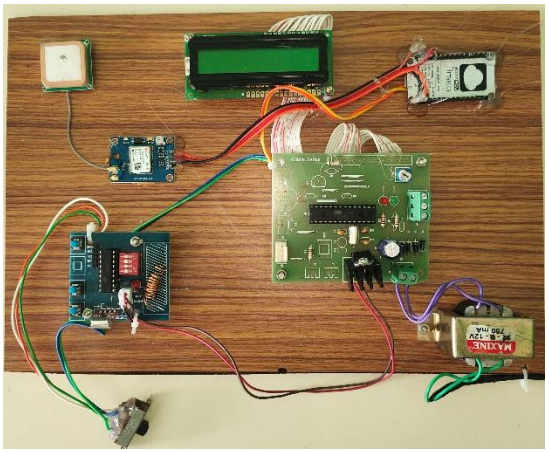

Figure 8: Hardware setup of Transmitter Section

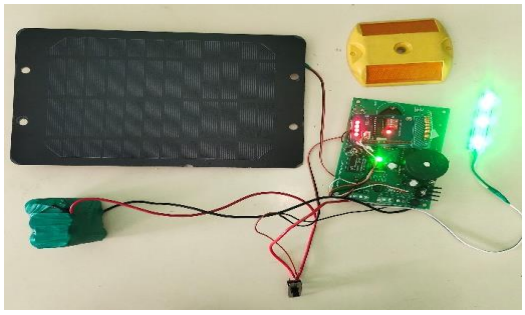

Figure 9: Hardware setup of Receiver Section (Road Stud)

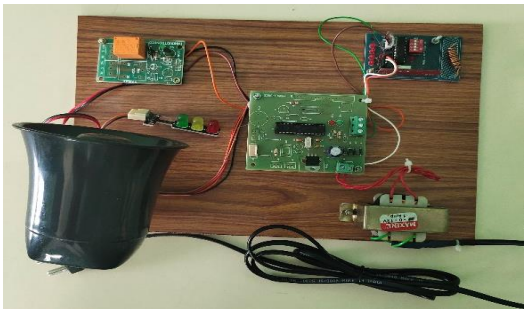

Figure 10: Hardware setup of Receiver Section (Traffic Light)

9. CONCLUSION

Hereby we conclude that a Photovoltaic Road stud receives RF signal been controlled by microcontroller for making indication to co-travelers to reduce traffic congestion for ambulance by minimizing the delay to reach the hospitals in time.

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10. FUTURE ENHANCEMENT

The RF modules testing it with longer range of the prototype can be done. At present, we have implementing the system by considering one road of the traffic as well as in rural areas. It can be improved by stretching to all the roads in highways, bridges, railway gate junctions, etc.

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