

Emergency Vehicle System

Ishan A. Sawaimul¹, Rajat D. Pillewan², Neha D. Kathane³

^{1,2,3}Students, Electronics Engineering Department, Dr. Babasaheb Ambedkar College of Engineering and Research, Wanadongri, Nagpur, India

ABSTRACT

Now days the road accidents in modern urban areas are increased to uncertain level. The loss of human life due to accident is to be avoided. Traffic congestion and tidal flow are major facts that cause delay to ambulance. To bar loss of human life due to accidents we introduce a scheme called EES (Emergency Evacuation System). 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. The idea behind this scheme is to implement EES which would control mechanically the traffic lights in the path of the ambulance. The ambulance is controlled by the control unit which furnishes adequate route to the ambulance and also controls the traffic light and thus reaching the hospital safely. This scheme is not fully automated, thus the emergency vehicle driver has to control the traffic lights, helping to reach the hospital in time.

Keywords: Accident, Congestion, Predetermined, Intelligent, Traffic Control

I. INTRODUCTION

Traffic management on the road has become a severe Problem of today's society because of Growth of the Urbanization, industrialization and population; there has been a tremendous growth in the traffic. With growth in traffic, there is occurrence of bundle of problems too; these problems include traffic jams, accidents and traffic rule violation at the heavy traffic signals. This in turn has an adverse effect on the economy of the country as well as the loss of lives. So problem given above will become worst in the future. In order to confiscate the need of controlling traffic Congestion and implementing EES, we can use 8051 Microcontroller (Family - AT89S51) along with RFID Technology. The problem of traffic light control can be solved by RFID based system. With this system, we can consider the priority of different type of vehicles on the road intersections. Radio frequency identification is a technique that uses the radio waves

to identify the object uniquely. RFID is a technique that is widely used in the various application areas like medical science, commerce, security, Electronic toll collection system, access control etc.

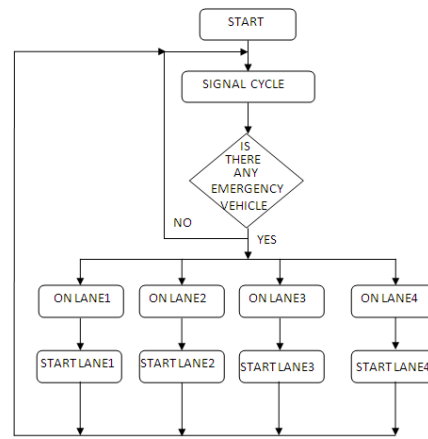
II. LITERATURE REVIEW OF RELATED WORK

In proposed system if emergency vehicle gets stuck in traffic then the driver of emergency vehicle is enabled to clear his lane by providing the trigger which turns on the green signal through which the emergency vehicle is get its path cleared to pass further. The transmitter mounted in emergency vehicle communicates with traffic signal through RF communication.

The system would be installed in emergency vehicles during critical hours. Every time a vehicle with Emergency enters a road blocked with many other Vehicles on the road, traffic signal receive the signal from emergency vehicle.

The signal light is turned green in that lane. They maintain green signal till it completes the time provided in the module. Systems provided an efficient time management scheme, in which a dynamic time schedule is worked out in real time for the passage of each traffic column.

As the target of the proposed system to be achieved, the system is to be analysed in the range of RF frequency and to be designed in an emergency mode for traffic light when emergency vehicle approaching and to prevent from emergency vehicle crash.



3.2.1. Encoder:

III. MATERAIAL AND METHOD

3.1. System Flow Chart

3.1.1. Case study

Transportation Research and Injury Prevention Programme

Indian Institute of Technology Delhi

<http://tripp.iitd.ernet.in/>

3.1.2. Design circuit

The circuit of this system is designed and constructed roughly using the entire chosen component during this phase. The components are assembled on breadboard to ensure that the circuit work properly.

3.1.3. Simulate design

After done all drawing, assemble and analysis process, the complete design can be seen using a Proteus software. The completed design must be rechecked so that the defect in the design can be reconsidered. If there is a defect, it must return back to configuration design process

3.2. System Block Diagram



Encoder is a device that encode the information in Particular way such as compressing, converting or Secure it in a different format.

3.2.2. Decoder



Decoder is a divide that decode the information from Encoder, decoder will remove the information from Previously encode state and return to its original format.

3.2.3. RF Transmitter and Receiver Module:

A radio frequency transmitter and receiver module will be used in the circuit to implement wireless Communication for this system

3.2.4. Microcontroller

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 4K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's High-density non-volatile memory technology and is compatible with the industry standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S51 is a powerful microcontroller which provides a highly flexible and cost-effective solution to many embedded control application.



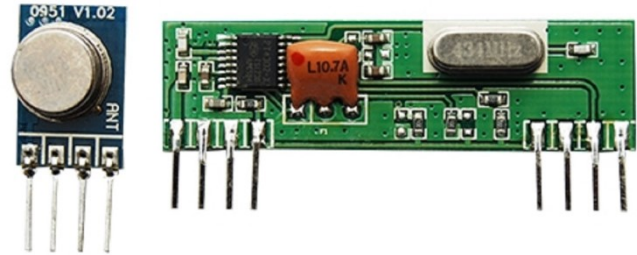
IV. RESULTS/FINDINGS AND DISCUSSION

This system consists of two part, the first part is Radio Frequency (RF) Transmitter circuit. The Function of Radio Frequency (RF) Transmitter circuit is to override the system of traffic light. The second part is Radio Frequency (RF) Receiver circuit.

The function of Radio Frequency (RF) receiver is receive the data from transmitter and change the sequence of traffic light system according to transmitter.

4.1. Radio Frequency (RF) Transmitter circuit

The transmitter consist of a Radio Frequency module, HT12E. Six push button and one LED indicator.



4.2. Radio Frequency (RF) Receiver

The receiver consist of Radio Frequency Module, HT12D. The sequence of the traffic lights is generated by the microcontroller. A LED is connected to microcontroller AT89S51; The controller will decode the data from transmitter. When the data was received from transmitter, controller will decode the data that which button is transmitted from transmitter.

4.3. Push Button Switch



A set of four push Button switches is used in the RF transmitter circuit. Each switch labelled with number 1, 2, 3 and 4 to indicate which traffic light at the intersection. These switch need to be push (switch on) in order to trigger the emergency sequence mode of the traffic light intersection.

The other switch is reset button and on/off button.

4.4. The Normal Sequence

The sequence of traffic lights started as green light of traffic light 1 and red light for others traffic light. The duration for each traffic light is 5 seconds only unless the Radio Frequency (RF) receiver received any signal

from transmitter, it will trigger the emergency mode for traffic light.

4.5. The Emergency Mode sequence

The emergency mode is triggered when the RF receiver received the transmitted signal from the RF transmitter to override the normal sequence of the traffic light. For example, an ambulance arrives at the traffic light 4 and the green light of the traffic light 1 is on. When the push-on button no.4 is turned on, the RF receiver received the transmitted signal and changed the sequence to the emergency sequence mode.

V. CONCLUSION

In conclusion, traffic light control system for emergency vehicle using radio frequency (RF) facilitate emergency vehicle to cross at the intersection of traffic light. This system implementing radio frequency (RF) as the medium for emergency vehicle communicate with traffic light system. This system can solve the problem for emergency vehicle when approaching traffic light with ease. In the future this prototype can be improved by upgrading the range of radio frequency can transmitted and applied this system to real traffic light system.

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