

Smart Rescue System Using Smartphone

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ABSTRACT

In our day to day life traffic congestion is a critical problem in all over the areas. In today's scenario we totally depend on automotive to travel and for our needs. The increasing number of vehicles in the cities. This results in traffic congestion and cause increase in time of travel. The emergency vehicles like ambulance and other personal vehicles which are used for emergency purposes find difficult to get the destination. This cause lives of many persons in danger condition. Our paper aims to save the lives of emergency people in critical condition. Here the mobile application plays a vital role, when an emergency person uses ambulance or uses their personal vehicle as emergency vehicle. The mobile app installed in their smart phone can be switched on at the start and it controls the traffic congestion in vehicle road way by adjusting the traffic signals. This traffic is managed efficiently by stopping others vehicles and allow emergency vehicle to hospital area. After vehicle crossing the congestion area, traffic signal control is given to their actual station.

Keywords: Internet of Things (IOT), Node MCU, Emergency, GPS.

1. Introduction

As it is known there is traffic congestion in every areas. So as to save the lives of emergency peoples in critical situation. Here this system is economical and user friendly. This system can be implemented for both village and metropolitan areas. We have implemented the mobile application to control the traffic signals in congestion area and send messages to nearby hospitals about the patient arrival. In case if it is medical emergency, it sends information nearby police station. As this system can also be used for safety measures at emergency situations. The delay in traffic is due to many parameters like accidents, weather condition, season and different situations. The traffic congestion can solved by constructing new roads and it has main disadvantage like surrounding areas get more congested. This can be solved by adjusting the traffic signals automatically towards emergency vehicle road side and shifts to original signals after the emergency vehicle passes that area. The important motive of this paper is to clear the traffic during emergency situation and allow the vehicle to nearby hospital.

The paper targets to create mobile app to send and control the traffic congestion. The traffic congestion control results in saving the life of emergency people and valuable people lives. Traffic problems are main reason behind the road accidents. This paper create mobile app in which hospital details and police station details are stored in it. When emergency people login to the app it shows nearby hospital details and roadmap through GPS. It also controls the traffic congestion to allow the emergency vehicle to reach the destination at correct time that uses their personal vehicle for medical emergency situation. This problem allows this paper to make traffic congestion free and save the life of emergency people.

2. Existing System

The existing system only control the traffic for ambulance vehicles, since it has several disadvantages we have introduce our new idea. The paper intelligent traffic consists of an android application which is used to register the necessary details about the patients and about their personal health problems. The android application sends emergency details to hospitals and the nearest hospital is identified based on GPS.

This paper implemented by ARDUINO, RFID reader for detecting RFID tag which is placed in ambulance and IR sensor used for sensing traffic congestion. This may mismatch the exact locate. In traffic management system using Raspberry pi and RFID controller with sensing element paper gives idea to sense accident detection and send messages to controller room. They used GPS based system to track the location.

The accident detection and security system paper includes a IR sensor to sense square measure area, if it detects it sends information to microcontroller and delivers the message to respective places. This paper has only message sending facilities. Intelligent auto signal controller proposed by Kavitha gives an idea about traffic congestion is a major problem in metro cities and it is increasing in world wide. This paper tells how to clear traffic during rush areas. Also there is possibility for the emergency vehicle to stick in the traffic jam. So, there is a need for the dynamic control of the traffic control during rush hours and they implemented a smart traffic signal controller. This system controls traffic by higher density of vehicles and also gives way to the emergency vehicles if any. This system is worked on the PUC 16F877A microcontroller, IR sensors and RFID. The code compiled in high technology C-compiler and simulated with Proteus software.

M.Sinha proposed a RFID system. The use of this system to avoid problems during standard traffic congestion. This system particularly discussed the image processing and beam interruption techniques. This system deals with multilane, multi-road and junction areas for efficient time management. They provide a time schedule for each traffic column. The disadvantage of this work is that it does not discuss about the methods for communication.

Xueye Wei proposed a TSR system as color global system to detect and rotation variation about the color lights. Abbas proposed a M2M-Bases Service Coverage. In this, the user's post emergency behavioral changes are included. This paper includes machine to machine network based service coverage for emergency environment. This system needs fewer resources to perform these functions.

From the current problem sections, the existing techniques are not sufficient to control the traffic congestion problem and to control emergency vehicles. We implemented a smart rescue system for emergency people by using node MCU and Android programming to control and to manage the message details. We implemented a smart rescue system with our smartphones to save emergency people lives and this also helps to control traffic congestion to give way for emergency vehicles.

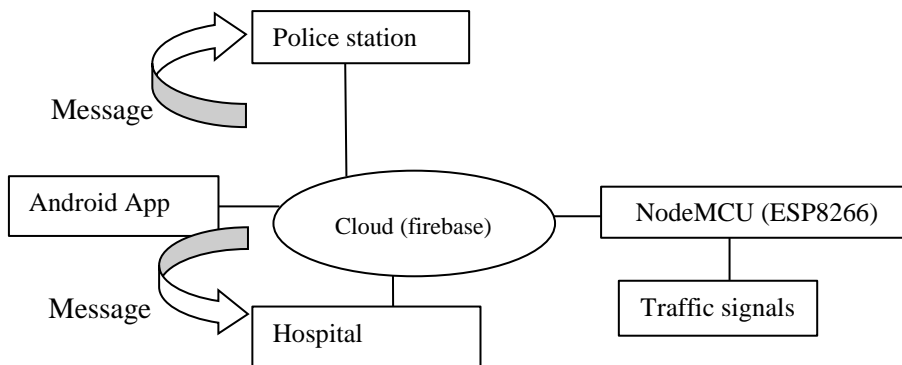
Table 1: Literature Review

Title of the project	Technology Used	Drawbacks
Intelligent auto signal control system	RFID reader	It can be lost at any point of time
Green wave system	GPS module	Wave is disturbed, then traffic signals get distorted
Vehicles Accident detect system	FPGA	The position is mismatched

3. Proposed System

This paper tells us how we can save the life and to reach the hospital in emergency situations. Here we have implemented this project for safety for emergency peoples and for betterment of traffic control in critical conditions. We have developed a mobile app with login page (Fig.3), so that we can reach the destination in correct time.

3.1 Block Diagram



3.2 Node MCU

Node MCU is an open-source firmware and (Fig.1) it is a development kit that helps to construct the prototype. It is used to build IoT products. It includes firmware that runs on the ESP8266 Wi-Fi SoC from Espressif systems. Node MCU is a development kit that helps to construct the prototype. In this system, ESP8266 is used to send information from cloud to control traffic signals.



Fig.1 Node MCU

3.3 Android Studio

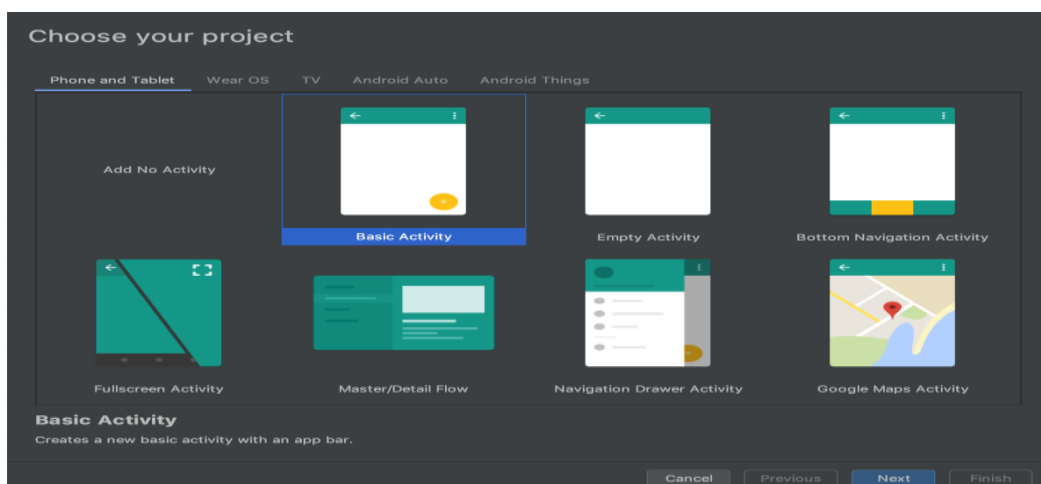


Fig.2 Android studio

Android studio is built for android to accelerate your development and help you build the highest-quality apps for every android device. Android Studio is Android's official IDE. It offer tools custom-tailored for android developers, including rich code testing/debugging/profiling tools/editing. In this project this is used to build app to send information and to control signals. Android studio (Fig.2) is built for android to build the highest-quality apps. In this system, used to build app to get user input and connects to signals.

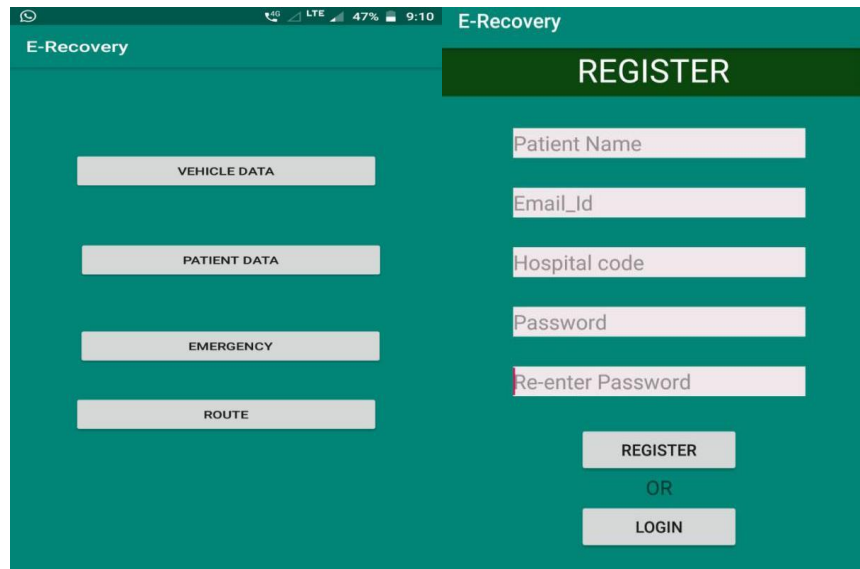


Fig.3 Mobile app with login page

4. Simulation Results

The various signals are changed and alter in medical emergency vehicle entry (Fig.4).

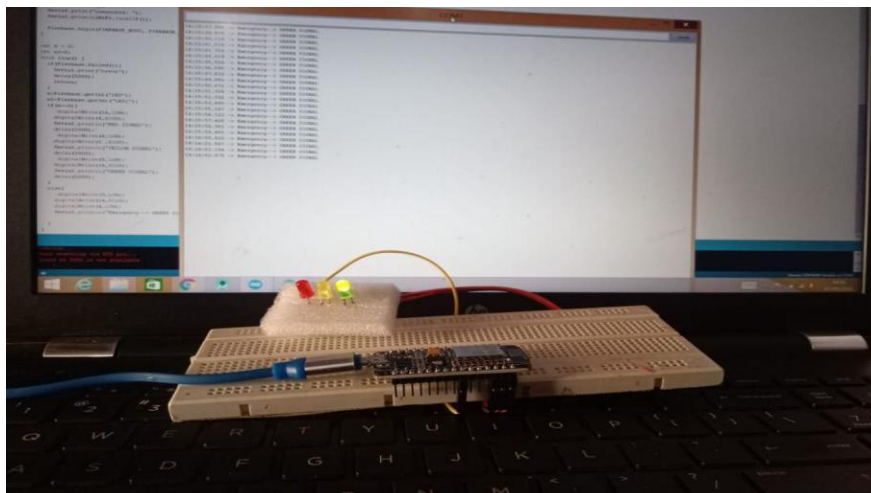


Fig.4 Simulation Output

5. Conclusion

This paper is mainly for safeguarding the lives of emergency peoples. Here with the help of mobile application we can send information to respective sectors and control the traffic signals. This system is mainly for safeguarding the lives of emergency peoples. Here with the help of mobile application we can send information to respective sectors and control the traffic signals and save the lives of many people.

6. Future Scope

This system that we have implemented is user friendly, minimum cost and easily accessible for everyone to implement in their daily life. Smart system with additional voice and video support for patients to self-assist and with shortest path for users.

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Declarations

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Competing Interests Statement

The authors declare no competing financial, professional and personal interests.

Consent for publication

We declare that we consented for the publication of this research work.

Code availability

The programming code that we have used for this research is available and authors are willing to share when it is required.

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