



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 7, July 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.542



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

Emergency System in Ambulance to Control Traffic Signals and Vehicle Detect using IoT

Samhitha Veeru N, Sachin KS, Rashmitha Poojari, Yadhu Krishna MR

Department of Information Science and Engineering, The Oxford College of Engineering, Bangalore, India

ABSTRACT: The 'Internet of Things' as a technology has opened up automation opportunities in almost every aspect of our daily lives, be it at home, in healthcare, in industry, with transport, wearable tech, and more. These opportunities have not only helped ease our day to day life, but also generated additional revenue models for businesses. Any modern vehicle contains many sensors which are used for creating a smooth riding experience. A few years back the automotive industry started centralizing and analyzing this sensor data to improve on their designs and safety features, thus creating better user experience for the end user. Various connectivity protocols are available for vehicles, which are used to collect data (such as real-time analytics) from the internal and external environment. This helps create the

next generation of intelligent vehicle systems. Standards developing organizations like ETSI* and 3GPP* are working together to standardize the communication protocol for vehicle-to-vehicle, and vehicle-to-infrastructure technology. This allows technology from different vendors to talk to each other, creating opportunities for intelligent system integration into Smart City networks, and Intelligent Transport Systems.

I. INTRODUCTION

By 2020, there will be billions of connected devices communicating over interconnected networks. To support this market of exponentially growing M2M devices, a sustainable and scalable infrastructure is required. Most IoT solutions have their own proprietary framework with little interoperability. For service providers, deploying multiple frameworks/ecosystems for the same service is neither feasible nor a profitable solution. With millions of devices already connected, there is ever increasing demand from end users for personalized service, better performance and a better user experience. Businesses want detailed information about their consumers, easier and secured access to devices, and greater flexibility for provisioning new services. This continuous growth is predominantly driven by mobile phones and connected devices. For a smart city, an intelligent, secure and integrated Traffic Control system is required to ensure smooth operation of day today traffic as well as manage emergency vehicle movement with minimal delay. Among available traffic control systems, none can currently automatically clear traffic congestion in case of emergency, allowing vehicles like ambulances, fire engines, and police vehicles to pass. With exponential growth in the number of vehicles on the road, there is a strong need for Intelligent Traffic and Transport Systems for hospitals, fire stations and police stations.

II. SIGNIFICANCE OF THE STUDY

A literature survey or a literature review in a project report shows the various analyses and research made in the field of interest and the results already published, taking into account the various parameters of the project and the extent of the project. Literature survey describes about the existing work on the given project. It deals with the problem associated with the existing system and also gives user a clear knowledge on how to deal with the existing problems and how to provide solution to the existing problems. Different things.

A Significance of the study includes the following

- Existing theories about the topic which are accepted universally.
- Books written on the topic, both generic and specific.
- Research done in the field is usually in the order of oldest to latest.
- Challenges being faced and on-going work, if available.

III. REVIEW OF RELATED STUDIES

B.Janani Saradha¹ G.Vijayshri T.Subha²; "Intelligent Traffic Signal Control System For Ambulance Using RFID And Cloud", (2017) conducted a study on creates an android app that connects both the ambulance and the traffic signal station using cloud network. This system uses RFID (radio frequency identification) technology to implement intelligent traffic signal control. The basic idea behind the proposed system is, if the Ambulance halts on the way due to a traffic signal, RFID installed at the traffic signal tracks the RFID tagged ambulance and sends the data to the cloud. After acknowledgment from the user through the mobile app, the particular signal is made Green for some time and after the ambulance passes by, it regains its original flow or sequence of signaling. If this scheme is fully automated, it finds the ambulance spot, controls the traffic lights. This system controls the traffic lights and saves time in emergency periods.

Bhandari Prachi, Dalvi Kasturi, Chopade Priyanka, "Intelligent Accident-Detection And Ambulance- Rescue System", (2014) conducted a study on Road accidents and traffic congestion as the major problems in urban areas. Currently there is no technology for accident detection. Also due to the delay in reaching the ambulance to the accident location and the traffic congestion in between accident location and hospital increases the chances of the death of the victim. There is a need to introduce a system to reduce the loss of life due to accidents and the time taken by the ambulance to reach the hospital.

Philo Stephy A, Preethi C and K.Mohana Prasad, "Analysis of Vehicle Activities and Live Streaming using IOT" ,(2019) conducted a study on the analysis of vehicle activities and live streaming that helps to analyze the cause of vehicular accidents and optimizes the face detection and recognition speed. The aim is to analyze accidents by tracking what occurs in vehicles. Send the alert message to the pre-stored number in case any accident occurs. Use sensors to record the varied driving information. After the accident information can be collected using an SD card. The System uses external sensors such as GPS to collect video and location data. The proposed system has the ability to control live video streaming over the internet via cloud computing.

Hari Sankar S, Jayadev K, Suraj B and Aparna P, "a comprehensive solution to road traffic accident detection and ambulance management", (2016)

conducted a study on a Delay in providing Emergency Medical Services (EMS) is the cause of the high mortality rate in road traffic accidents in countries like India. There is delay involved in each and every stage of the process, right from reporting an accident to dispatching an ambulance, till the patient is safely handed over to the casualty. Minimizing this delay can help save lives. We propose a comprehensive solution to both accident detection and ambulance management. When the in-vehicle accident detection module reports an accident, the main server automatically dispatches the nearest ambulance to the accident spot. The Android application used by the ambulance driver assists the driver to reach the location quickly and safely. Automation of accident detection and ambulance dispatch, along with providing guidance to the ambulance driver, is achieved here. This can save precious time and help standardize the whole process.

IV. OBJECTIVES OF THE STUDY

- Learning the definitions of the concepts.
- Access to latest approaches, methods and theories.
- Discovering research topics based on existing research.
- Concentrate on your own field of expertise-Even if another field uses the same words, they usually mean completely.
- It improves the quality of the literature survey to exclude sidetracks-Remember to explicate what is excluded.

V. METHODOLOGY

1. Detecting the Ambulance:

This phase involves an RF transmitter and receiver module. Once the ambulance is near the signal, the person driving the emergency vehicle can send a command to the RF receiver module thereby guiding the traffic signal to change accordingly and when the ambulance is near to the vehicles which are crowding the way, these vehicles will get the emergency alert to clear the road. However, there is a security accessibility trade-off in this system.



2. Automatic Signal Control:

IoT plays a major role when the ambulance reaches within range of the local signal system, the traffic signal except the way in which the ambulance comes towards the signal is opened and all others are closed. Hence making way to the ambulance without any interruption and making the crews reach the hospital and save time.

3. Accident detection and server communication:

We are using accelerometer for the detection of accidents of vehicles. So when vehicles are met with an accident that information will be sent to the server side. This information is broadcasted to the nearest ambulance or to the nearest hospital from the nearest traffic signal controller. Once the ambulance or the hospital receives the information about the accident location it can provide necessary aids to the place where the accident happened.

VI. SAMPLE DATASET

The RF modules are very small in dimension and have a wide operating voltage range. Basically the RF modules are 433 MHz RF transmitter and receiver modules. The transmitter draws no power when transmitting logic zero while fully suppressing the carrier frequency, thus consuming significantly low power in battery operation. When logic one is sent the carrier is fully on to about 4.5mA with a 3volts power supply. The data is sent serially from the transmitter which is received by the tuned receiver. Transmitter and the receiver are duly interfaced to two microcontrollers for data transfer.

RF Modules have several features:

- Receiver frequency 433MHz
- Receiver typical frequency 105Dbm
- Receiver supply current 3.5mA
- Low power consumption
- Receiver operating voltage 5v
- Transmitter frequency range 433.92MHz
- Transmitter supply voltage 3v~6v
- Transmitter output power 4v~12v

Techniques Used in the Present Study

RF Transmitter and Receiver

In many projects we use RF modules for transmitting and receiving the data because it has a higher volume of applications than IR. RF signals travel in the transmitter and receiver even when there is an obstruction. It operates at a specific frequency of 433MHz.

ADXL Sensor

The ADXL 335, 3-axis accelerometer, now has an onboard 3.3V regulator –making it a perfect sensor module for Arduino, Raspberry Pi, and similar Microcontrollers. This breakout comes with 3 analog outputs for the X, Y and Z axis breakout board. The ADXL335 is the latest and greatest from Analog Devices, known for their exceptional quality MEMS devices and applications in Robotics is now available at vyga Electronics, thiruvalla, Kerala, India. The VCC takes up to 5V in and regulates it to 3.3V with an output pin.

Relay

This small Relay Board works from a 5V signal. It uses a transistor to switch the relay on so it can be connected directly to a microcontroller pin. Switches up to 10 Amps. Rated at up to 250V.

Relay with light bulb

A relay is basically a switch which is operated by an electromagnet. The electromagnet requires a small voltage to get activated which we will give from the Arduino and once it is activated, it will pull the contact to make the high voltage circuit. The relay module we are going to use is the SRD-05VDC-SL-C. It runs on 5V and we can control it with any micro-controller but we are going to use Arduino. Inside the relay is a 120-240V switch that's connected to an electromagnet. When the relay receives a HIGH signal at the signal pin, the electromagnet becomes charged and moves the contacts of the switch open or closed.



VII. CONCLUSION

The majority of the most populated cities in the world are old enough that there historically has been very little or no planned roads and intersections. The sight of slow moving, or stuck ambulances in traffic is very common in most of these cities. There is a strong need to create an intelligent traffic management system which not only prioritizes the passage of emergency vehicles, but also takes into account the existing infrastructure. Human life is very precious and must follow safety measures very consciously in all aspects. This System is implemented to avoid congestion of traffic to reach the particular place, hospital and to save the life of the human. The traffic signal is automatically controlled. The traffic signals are controlled by cloud servers. This gives a solution for the easy passage of emergency vehicles without any interruption. Hence reduce the emergency response time and increase the minimum inconvenience to regular traffic in saving the life of the people.

REFERENCES

1. B.Janani Saradha¹ g.Vijayshri¹ T.Subha²; “Intelligent Traffic Signal Control System For Ambulance Using RFID And CLOUD”, 2017.
2. Bhandari Prachi, Dalvi Kasturi, Chopade Priyanka, “Intelligent Accident-Detection And Ambulance- Rescue System”, 2014
3. Frahim Wadud Taj; Abdul Kadar Muhammad Masum; S M Taslim Reza; Md. Kalim Amzad
4. Chy; Iftekhar Mahbub, “Automatic Accident Detection and Human Rescue System: Assistance through Communication Technologies” 2018
5. Philo Stephy A, Preethi C and K.Mohana Prasad, “Analysis of Vehicle Activities and Live Streaming using IOT” , 2019
6. Hari Sankar S, Jayadev K, Suraj B and Aparna P, “a comprehensive solution to road traffic accident detection and ambulance management”, 2016
7. Tandrima Chowdhury, Smriti Singh, Dr.S.Maflin Shaby ,“ A Rescue System of an Advanced Ambulance Using Prioritized Traffic Switching”,2015



INNO  **SPACE**
SJIF Scientific Journal Impact Factor
Impact Factor: 7.542



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 **9940 572 462**  **6381 907 438**  **ijircce@gmail.com**



www.ijircce.com

Scan to save the contact details