

# Emergency Vehicle Alert System: An Overview

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**Abstract-** Vehicular traffic is endlessly increasing everywhere in the world and can cause terrible traffic congestion at intersections. The vast majority of the movement lights today highlight a settled green light succession; in this way the green light grouping is resolved without considering the nearness of the crisis vehicles. Along these lines, crisis vehicles, for example, ambulances, squad cars, fire motors, and so on stuck in a congested driving conditions and postponed in achieving their goal can prompt loss of property and profitable lives. This document present an approach to plan crisis vehicle in travel. The approach combine the dimension of the space among the crisis vehicle as well as an junction through visual sense method, vehicle counting as well as time responsive alert broadcast inside the sensor network. The space among the crisis vehicle also the junction is considered for association using Euclidean distance, Manhattan distance and Canberra distance techniques. The system finally show the outcome with site signal light blinking that can eliminate the traffic overhead to that vehicle.

**Keywords-** Emergency Vehicle; Ambulance; Alert Transmission; Sensor Network.

## I. INTRODUCTION

In this to implement a system that can provide the alert of emergency vehicle, this functionality can solve the long queue waiting for emergency vehicle like ambulance or any other vehicles. The response or else coming time of crisis vehicles (ambulances, firefighters, police, etc.), has greater than before considerably, which is reflect in a substantial enhance in human being as well as material misfortunes. A point to make a decision as a plausible explanation behind this is the quantity of vehicles is increasingly growing. In Ecuador, the quantity of vehicle enlarged 57% amongst 2010 as well as 2015 according to the INEC (National Institute of Statistics and Censuses of Ecuador). Nowadays, the just choices accessible to crisis vehicles to alarm different drivers of their participation are alarms, amplifiers likewise, now and again, outside assistance from transportation specialists; unfortunately, drivers of specific vehicles that are in the pathway of a crisis vehicle give careful consideration to the sound cautions issue by them, periodically on the grounds that they flow with shut window and tune in to business radios at a high volume. This condition create gradualness in rush hour gridlock which, at times, deliver an impressive

addition in the interpretation time of crisis vehicles. It is assessed that the landing time of ambulances to their goal can be decreased by up to 40% if private vehicles offer approach to them helpfully amid their exchange.

## II. LITERATURE SURVEY

In today's era, there are many cities which are working on transforming themselves into Smart Cities. If the city is going to be called as Smart City, then it should have all possible advancements in the sector of smart technology. Nicola Bui proposed Improving efficiency in healthcare sector if one of the difficult and most challenging jobs. That includes various aspects such as getting ambulance within minimum amount of time, providing proper treatment to the patient so that the chances of surviving increases in critical condition. Traffic congestion is one of the real issues in urban territories, which have caused much hitches for the rescue vehicle. Also street mishaps in the city have been expanded and to bar the death toll because of the mischances is much more essential. We can overcome these limitations by upcoming technology like IoT i.e, Internet of Things. Various hardware devices can be connected with each other via wired and wireless networking tools and software implementations. Use of various REST APIs can help to communicate between the server and client end which is implemented in this project. REST APIs are designed in such a way that time complexity will be minimized extensively. This is achieved by exchanging only the required data with server in order to minimize the traffic and loss of data packets in the process of transaction. With the help of cutting edge technology and keeping the goal in mind we've developed this application. It is also an attempt to participate actively in the process of transforming into smart city and make required services more accessible.

Google has developed API for user's ease. Google Maps gives information about hospitals nearby, with its rating and distance from user's current location. The drawback of Google Maps is that it only pins the hospitals but does not provide their detailed information. Hence user may need to access information about the hospital by going to particular hospital's website. Smart ambulance system application overcomes this drawback and gives hospital information related to user's medical emergency. It's a protocol that gives information efficiently about the patient's health including pulse, blood pressure etc. It also tells about the respective drugs and medicines

automatically. All this is informed to the doctor and the caretaker about the patient's condition. All these interactions are controlled and takes place under Ambient Assisted Living (AAL) system. This Project has a facility of delivering the prescribed drugs to the patients. A Device named Ubiquitous Drug Injector (UDI) also has designed. One More pervasive device is designed which is for patients. It receives inputs from the ambient sensor devices. It correctly infers the patient's condition. All the things done in this project facilitates in prescribing appropriate drugs for the respective diseases and saves lot of time .

Veera muthu Venkatesh [3] project has a goal to create a smart environment at the hospital and the ICU unit is the main aim. Here a small difference or the treatments given at that time can make great changes. For implementing this researchers have used ZigBee which is a wireless Communication protocol, OSGi it's a middleware called as Open Service Gateway initiative. A knoplerfish is used which is a framework for implementing OSGi. The ICU can be made more sophisticated by the use of pervasive computing devices, sensor, and wireless communication technologies. This project helps doctors to get information about his patient admitted in the ICU. All the changes in patient's physical condition can be received by the doctor remotely. Various outputs given by the monitoring systems is collected. It is then sent to the orchestration server and which hosts the web services. A camera is fixed at the patient's end. All the collected information of the live feeds of the patient is stored at the distributed database. It is then displayed in the web service according to the doctor. Hence, doctor gets information about the patient's condition and caretaker gets the information about the prescription of the patient . According to Rehka Jadhav et. Al. Importance of communication during the disaster times is understood well by this project. Emergency situation includes disasters like fire, medical emergencies, accidents, earthquake, floods or any other natural calamity. The project works on enabling ad hoc smart phone based communications at the emergency time over WIFI, to avail the service the person in trouble shall call EMS(Emergency Management System) designed by this project. Requests are received by the server. Lent server system principle is used the server responds to the client's request. Customer and save application is produced as an android application. Server is actualized as an electronic application. The framework is tried utilizing different GPS empowered android Phone.

As per Ruihua Zhang et. Al. wellbeing status of the remote sensor systems is moderately dark to the system heads, and they are sent to screen nature. This

undertaking gives identification of disappointment and side effect cautions too. The task is separated into 2 sections as, vitality proficient convention and disseminated disappointment indicator module. Vitality effective convention is utilized for conveying state synopses. The disappointment identifier is vigorous to bundle misfortunes and endeavors that the reports of disappointment won't surpass an explicit rate on negative side. The discoveries are assessed by actualizing for little OS stage on Mica2 notes on a 55-hub system, and find that the undertaking increases 8090% decreased transmission capacity use when contrasted with standard information gathering techniques. From literature review, it is evident that IoT has many possibilities of innovative applications to help improve human life .Among the four main categories of IoT applications listed above, transportation and healthcare domain are the most beneficial for common people, especially in India. In India due to the large population and increasing demands of the vehicles and amount of increasing traffic have led to more number of death scenarios that occurs in metropolitan cities due to engaged traffic and blocked roads. Analysis says that on an average it takes 4-5 mins to clear a traffic jam. The proposed model will notify the traffic signal system or authorities as an advance alert, so chances of clearance of road before arrival of ambulance is increased . By using the existing technologies the module can reduce death caused by traffic jams by at least 20%. And the proposed model will be a helpful initiative in the development of Smart City resounding with the Indian government's ideology of developing smarter and safer city infrastructure.

### III. RESEARCH METHODOLOGY

We've tried to keep the architecture of the system as simple as possible. As there won't be need of any security model the architecture complexity is automatically reduced. Following diagram states working of one part of module. Fig. 1 suggests user sends requested to server regarding the required service i.e. either ambulance in the ward or any private hospitals ambulance service. Further if any ways in any ward if the ambulance services are restricted apparently. For example emergency cases occurred is 6 and available ambulance is 4 so in such scenario the revised module can be used in which the owners private car can act as the ambulance for sending the advance alert. The question arises is how is this possible? The revised module of the above will have and chip embedded with can be connect with cars battery or with the car owner's mobile phone (the module registration is mandatory).After that using the GPS of mobile technology the request can be send apparently and

by this the car can be turned into ambulance resulting and

can take initiative of saving the life.

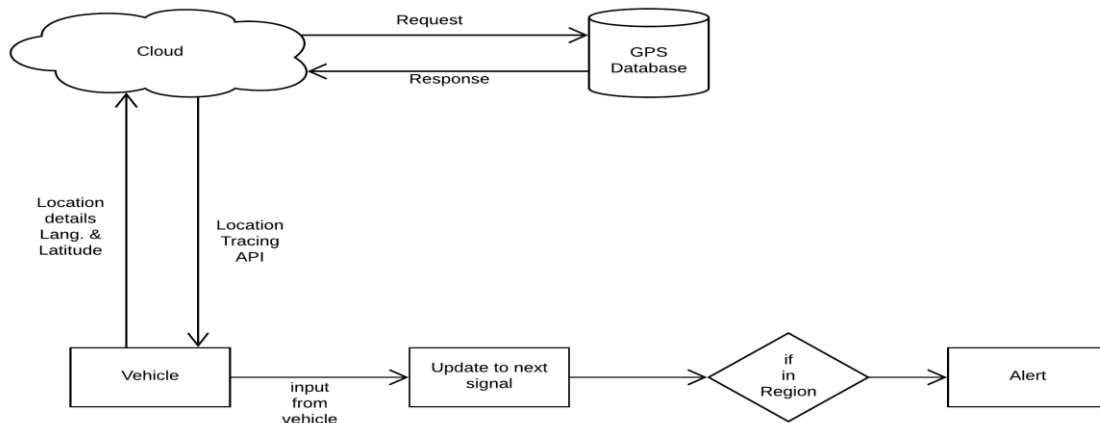


Fig.1 : System Architecture

Ahead the server will be sending the location of the ambulance using the Google map server API. It will be connected via a receiver or any android device via an app and notifications which will be triggered apparently with the estimated time the ambulance will take to reach the number of signals.

Hardware components and software components.

#### A. Hardware components

- 1) Raspberry Pi: The Raspberry Pi is a minimal effort, charge card estimated PC that connects to a PC screen or TV, and utilizes a standard console and mouse. The Raspberry Pi Model B+ has double center ARM11 processor with 512MB SDRAM and powers through Micro USB attachment of 5V. Sensors are associated with the Raspberry Pi Model B+. Raspberry Pi sends the data to servers through GSM module.
- 2) GSM module: It requires a SIM (Subscriber Identity Module) card simply like cell phones to enact correspondence with the system. The utilization of GSM to send wellbeing data to website page. This enables patient to leave the healing center yet at the same time he needs to remain in some realized spots to guarantee the capacity to contact him in crisis cases. Indeed, even with this arrangement the patient can't move uninhibitedly and be a long way from his home.
- 3) Max232: The MAX232 IC is utilized to change over the TTL/CMOS rationale levels to RS232 rationale levels amid sequential correspondence of

microcontrollers with PC. This makes it hard to build up an immediate connection between them to speak with one another. The transitional connection is given through MAX232. Low Supply Current 8 mA.

- 4) Cloud Database: Ahead the server will be sending the location of the ambulance using the google map server API. It will be connected via a receiver or any android device via an app and notifications which will be triggered apparently with the estimated time the ambulance will take to reach the number of signals.

#### IV. CONCLUSION

In this work, an idea is proposed for saving a patient's life in a faster way in emergencies. With this Application, advance alert can be sent to traffic signals..Hence it reduces the time complexity and helps to provide faster transportation services for the ambulance. In order to save lives there are many other factors which can be taken into consideration. Traffic is one of the most serious issue faced in day Hence the above ideology can be easily implemented using existing technology and an expert solution to traffic system of advance alert helping in the emergency cases to reach hospital on time. The proposal would act as an aid to transportation domain and would also contribute towards Digital India smart city initiative.

#### V. FUTURE WORK

Future scope of this project can be planned by using some of the similar concepts used in this project. In order to save lives there are many other factors which can be taken into consideration. Traffic is one of the most serious issue faced

in day to day life. This can create delay for the ambulance to reach the hospital. Traffic police can help in this if they know the ambulance's current location in advance. For the same, traffic police will be provided with an application which shows the current location of ambulance through GPS. Henceforth, traffic police will be able to clear the traffic in prior making way for the ambulance.

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