

# SMART AMBULANCE WITH TRAFFIC CONTROL ABILITY

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**Abstract** -Road traffic has become the major challenge in current urban cities, which made inconvenient for an ambulance if it is carrying an emergency patient. The ambulance must wait for clearing the traffic, which may take several minutes to hours sometimes. Due to this ambulance reaches the hospital with many delays, and there may be a condition that patient undergoes hazardous problems or may die. The embedded technology has been used to avoid such road traffic congestion by controlling the road traffic signal which automatically turns the red signal to green whenever the ambulance reaches near to traffic light control. The system also monitors the patient health present in the ambulance and maintains two-way communication with the concerned doctor in the hospital. It also opens the hospital gate automatically whenever the ambulance reaches the hospital.

**Keywords:** Road traffic, IoT, Ambulance, heartbeat sensors

## 1. INTRODUCTION

The traffic jam in metropolitan cities has become a serious issue. Many people die in an accident due to the time delay in traffic. In such a scenario, concepts of smart traffic systems and the smart health system can be developed. Combining the above two, the smart navigation system for ambulances is being tried.

In India rapid growth of population coupled with a high rate of industrialization has resulted in an unmanageable increase in traffic volume, especially in metropolitan cities and urban areas. Due to increase in traffic density, several lives are lost due to delay in receiving medical care. So, we designed a system which prioritizes emergency vehicles like ambulances and provides them with a congestion-free path to reach its destination as soon as possible.

This can help in taking preventive measures at the very initial stage and attempts to cure the illness before getting to a serious stage.

### 1: Methodology

This paper proposes system into two parts -Hardware & Software. The hardware unit is further divided into two subunits - Transmitter & Receiver. The Transmitter unit is consisting of nod-MCU and Arduino UNO it consists of

different health sensors like the heartbeat, temperature Sensors which are wearable that are placed on the patient's body [1]. Sensors sense the patient body parameters. The sensed data is sent to the cloud and that data is accessed by concern hospital so that the hospital can prepare for the treatment of the patient. In the block diagram, there are sensors, nod-MCU, Internet and Cloud. When the ambulance reaches to the accidental place driver will retrieve the basic information like name, age, blood group, etc. If available and this information will send over the cloud. This information is accessed by the hospital through the web app and it will maintain information of patient like name, age, disease, previous medical history if available [2]. As soon as the patient sits in the ambulance it must reach the hospital in minimum time, so we are proposing a system which will make ambulance reach the hospital in minimum shortest path using google maps API and that ambulance is assembled with nod-MCU that will transmit the Wi-Fi signal continuously [3]. And that signal is sensed by other nod-MCU installed on the signal platform so that it can turn into the green signal as soon as the ambulance reaches to that point and other signals turn into the red until ambulance passes through the signal [4].

## 2. RELATED WORK

**2.1 Problem Statement:** To design/build an ambulance system with patient health monitoring system and traffic analysis approach and to develop a system which will monitor continuous medical condition of an individual on a device like smartphone and further transmit this info to IOT server which is user accessible over internet, so the person will get an appropriate therapy accordingly.

### 2.2 Existing System

In the existing system, we don't have an automatic traffic control system for the ambulance. GPS technology is also used to help hospitals to get the best services. Smart watches are expensive and not ideal for healthcare.

### 2.3 Proposed System:

As there is traffic congestion in various cities and it directly affects to the ambulance and the patient. If ambulance stuck in traffic then there may be chance of losing the life of patient to tackle these problem we are going to develop a system that will automatically give path

to the ambulance by using the Arduino and nod-MCU whenever there any situation to transport of patient to the hospital the system will take patients data such as body temperature, pulse rate and send it to the nearest hospital and along with this all signals which are on the way to the hospital turn into green to give way to ambulance.

### 3. SYSTEM DESIGN

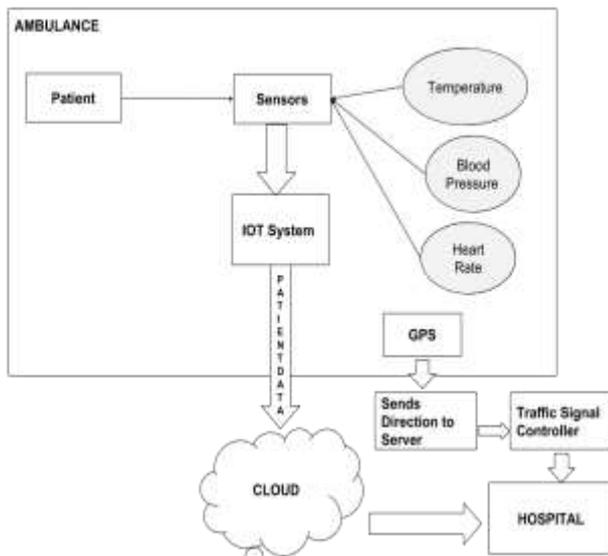


Fig3 .1: Block Diagram

#### Advantages:

- Sending patient's health information to the hospitals helps the hospital staff to get things ready required for the treatment.
- Control the traffic light based on the direction.
- Information about the private hospital's ambulance provided helps in getting the appropriate hospital which is suitable for the patient's treatment.
- It's beneficial for the users in case of emergencies as it saves time which gets consumed in searching for the ambulance by other means.

#### Applications:

- Defense vehicles in emergency cases.
- Fire extinguishing vehicles
- Police vans in emergency cases

### 4. CONCLUSION

This proposed system helps to save the life of patient by making ways for the ambulance if their traffic at the traffic signal board.

It also monitors the patient's health regularly and informs respective doctor so that he can make arrangement for further treatment at an earlier time.

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