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# Design of Advanced Signal System for Emergency Vehicles and Other Priority Vehicles

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**ABSTRACT:**In past Two decades the population of India as well as world is increasing which results increasing the numbers of vehicles. Simultaneously traffic jam also increasing especially in metro cities due to different kind of movements of vehicles. Because of which emergency vehicles such as Ambulances, Fire Engines, etc. are facing problems to reach their destination which ever it is (Accident spot or hospitals) on time. The important purpose of emergency vehicles to save human life irrespective of all the aspects. In daily life we see in the news and on all the other media sources that people are losing their life because emergency vehicles didn't reach to them or their destination on time. That's why traffic jam has become huge problem now a days.

**KEYWORDS:**Emergency Vehicles, Advanced Signal System, Bluetooth,GPS.

## I. INTRODUCTION

Population in developing countries like India is increasing rapidly. India stands Second place in world in terms of populations. Numbers of vehicles are increasing with increasing population. This causes the numbers of problem such as heavy traffic congestion, due to change in people lifestyle, they are using their own vehicles rather than public transportations. Violation in traffic rules as well as accidents because people are not obeying traffic rules and speed limit. According to survey done by Indian Government 16 death per hour are recorded in metro cities like Bangalore, Chennai, Kolkata, etc. Traffic jam is often associated with blocking emergency vehicles like ambulance, fire engines and other priority vehicles.[3]

Traffic congestion in metro cities has increased. Due to this huge human loss are take place. In the current traffic situation, therefore, helping an emergency vehicle move out of traffic congestion is very much important. To solve the problems given above.[3] The expansion of road infrastructure is not ultimate solution to the traffic congestion. It requires some smart mechanism that deals with the problems in the present traffic controlling system.[11]

In this paper, we find way to overcome this problem we are presenting "Design of Advance Signal System in Metro City for Emergency Vehicles and Other Priority Vehicles." Which helps to improve transportation of emergency vehicles.

## II. LITERATURE REVIEW

This study helps to analyze the road accidents in India at national, state and metropolitan city level. Mainly the paper is useful to find out causes wise distribution of road accidents deaths and injuries in India varies according to age, gender, month and time. Age group 30-59 years is the most penetrable population group, though males face higher level of fatalities and injuries than their female equivalents. Moreover, road accidents are relatively higher in extreme weather and during working hours. Analysis of road accident scenario at state level and city level shows that there is a huge variation in death risks across states and cities. Death risk in 16out of 35 states and union territories is higher than all India average. Even, burden of road accidents in India is highly lower in metropolitan cities, almost 50% of the cities face higher death risk than their rural area counterparts. Development of emergency medical transportation /services for a turbulent future.[1]

In this paper, Accident detection and rescue mechanism is explained. Today with the increasing vehicles and different kind of cars and the large movement that occurs every day on the roads it is natural to observe an increase in traffic accidents, but the real problem lies in how to make rescue process efficient. The problem that we want to solve is the

response of the ambulances towards accidents and the lengthy registration process of patients in hospitals.[2] In the above two scenarios, the manual process of calling the ambulance leads to delaying rescue of patients from an accident and the delay in registration of patient leads to delay in medication or treatment of the patient. They want to make the process more efficient by automating accident detection for increasing efficiency of the ambulance rescue process and by the sending the details of the patient before the patients reaches to the hospital for faster treatment of patients. Along with this, alert messages will be sent to the family or friends to notify them as soon as an accident detected.[3] This research informs about home automation using Bluetooth. Home automation becomes very popular among researcher. Past two decades researcher is working with home automation. Home automation using wireless device becomes popular. Several wireless devices are available like Bluetooth, Zig bee and GSM. Researcher are targeting Bluetooth based home automation because of its cost which is very less as compare to any other medium. Many mobile phones have an in-built Bluetooth. This paper discussed about various techniques involved to control the home appliances, controller used and number of devices controlled. This technology can also be used in home security, smoke detectors etc. In this paper researcher addressed control of device using Bluetooth and internet.[4]

### III.OBJECTIVE

1. To collect information of various parameters which leads to traffic jam.
2. To study signal systems in India.
3. To study the different devices which can control the traffic jams.
4. To select devices to be used in signal system and collect information about them.
5. To design the advance signal system with in minimum cost.

### IV. PROPOSED METHODOLOGY

Analysis of parameters which creates obstacle to reach EV on their destination: Now a days traffic congestion become main obstacle for the emergency vehicles. Emergency vehicles got stuck incongestion and got delay to reach their destination.



Fig.1 Ambulance got stuck in Traffic

Study and analysis of various connectivity devices: Connectivity devices are the devices that are necessary to build a network and to keep communication flowing. It consists of many software and hardware. These devices are help us to transfer signal in fast, secure and correct way over same connection.

Bluetooth: Bluetooth wireless technology, a device has to be able to interpret certain Bluetooth profiles, which are definitions of possible applications and specify general behaviour that Bluetooth enabled devices use to communicate with other Bluetooth devices. These profiles include settings to parametrize and to control the communication from start. Short range transmission of health sensor data from medical devices to mobile phone, SET TOP BOX or dedicated telehealth devices.

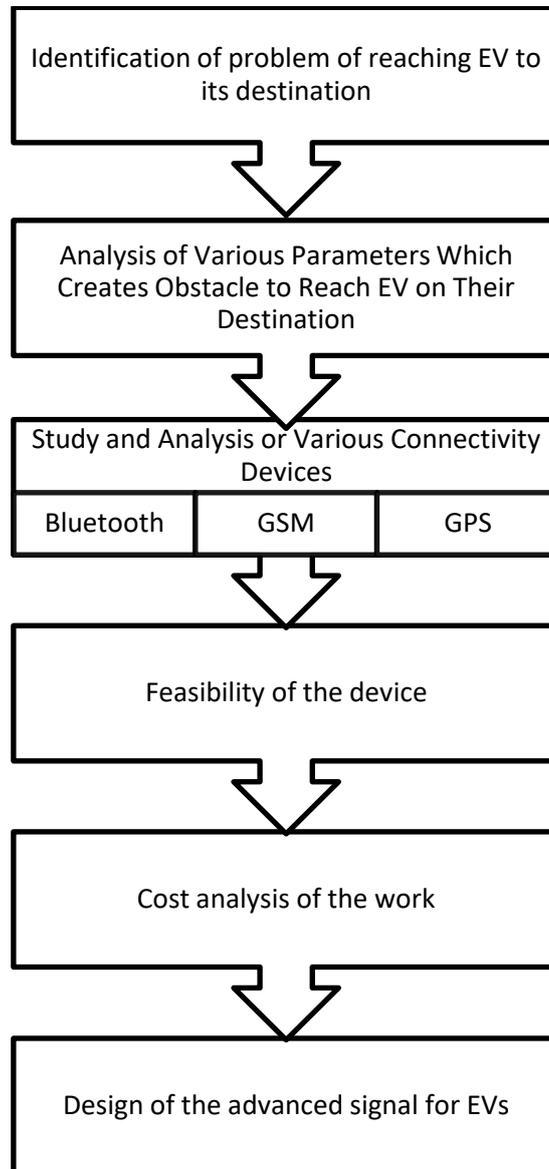


Fig.2 Proposed Methodology

#### V. PROCEDURE OF MODEL

The enhanced Bluetooth device is obtained by enhancing a Pico net of normal Bluetooth. We separately worked on connectivity of two devices in series and mobile moving Bluetooth device. The testing was made on site and it was feasible for congested traffic.

India is heavily populated country. We found that at peak hours even if civilians are enthusiastic to help emergency services, they couldn't; due to low prior idea of heat moment civilians find hard to adapt to situation. Considering this aspect, we developed this device.

Other methods for similar are as follow

- (a) GPS system,
- (b) Fully Wired connection
- (c) Wi-Fi
- (d) IOT
- (e) Satellite signal system
- (f) GSM

It is easy to fit, smaller in size than every other possible method, maintenance cost is negligible and is cost effective. This angel device can be used in optimum level if fitted in series. The more devices would be used the accuracy of work can be maximized. Connectivity plays crucial role in project. Wave length of piconet can be two sided swords if not used properly. That's why we recommend this device to be used in series.

Resources IC board Bluetooth device.  
(PCB) printed circuit board

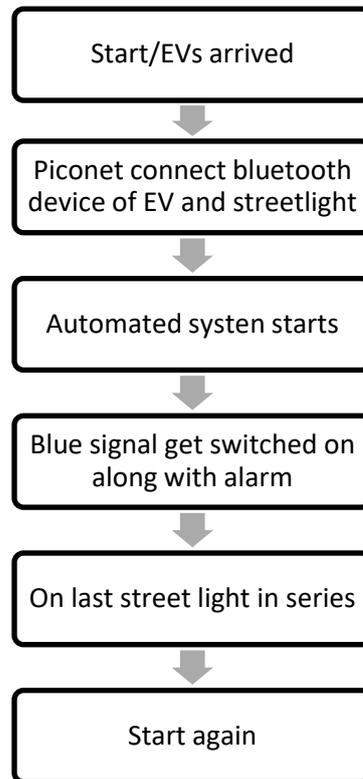


Fig.3 procedure Model

## VI.EXPECTED OUTCOME

Every emergency vehicle can reach its desirable destination on time: The emergency vehicles such as ambulances, fire extinguisher and police vehicles should reach the designated destinations fast and safe. The emergency vehicle is a vehicle that is used by emergency services to respond to an incident. Emergency vehicles may be exempted from some conventional road rules in order to reach their destinations in the fastest possible time, such as driving through an intersection when the traffic light is red, or exceeding the speed limit.

Traffic can be managed easily: Traffic Management refers to the combination of measures that serve to preserve traffic capacity and improve the security, safety and reliability of the overall road transport system. Its aim is to provide for the safe, orderly and efficient movement EV.

Creating a habitude practice of helping others can be achieved: Emergency vehicles can communicate and coordinate with traffic signals so they can get to their destinations as fast as possible. A habit starts with one decision, and one action, so take action today. Do something nice for someone.

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