



**IJIRCCCE**

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



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 5, May 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 8.379**

 9940 572 462

 6381 907 438

 [ijircce@gmail.com](mailto:ijircce@gmail.com)

 [www.ijircce.com](http://www.ijircce.com)

# Smart Ambulance Tracking System Using IOT

Monisha R<sup>1</sup>, Apoorva G O<sup>2</sup>, Amulya S<sup>3</sup>, Bindushree B S<sup>4</sup>, Yadhushree M<sup>5</sup>, Siri Devi K R<sup>6</sup>

Assistant Professor, Department of Computer Science and Engineering, SJM Institute of Technology, India<sup>1</sup>

Assistant Professor, Department of Computer Science and Engineering, SJM Institute of Technology, India<sup>2</sup>

UG Student, Department of Computer Science and Engineering, SJM Institute of Technology

Chitradurga, Karnataka, India<sup>3,4,5,6</sup>

**ABSTRACT** Lack of green traffic controls can result in the loss of many lives since ambulances can no longer get to the hospital in time. Additionally, the problem is getting worse since annual vehicle growth is currently around 11% and annual road extension closures are currently about 4% in developing nations like India. The study offers a novel, clean-enforcement solution for traffic control during emergency situations that calls for the most efficient three key devices: NODEMCU, and numerous sensors.

Avoiding the loss of human lifestyles due to happenstance. Many people are currently perishing in tragic turns of fate because of the truth. Sometimes the main cause is eliminated before the person arrives at the clinic in an ambulance. A character's life in an emergency situation must be saved at any costs, every single second. Finding every second that is effective in keeping a person is the assignment's most crucial idea. Congestion among site visitors is a serious problem that need prompt response. This results in time waste and, occasionally, lifeless reasons. To address this issue, we suggested an IoT-based visitor's mild sign control for ambulance.

An enormous increase in population brought due to the expansion of urbanisation and industry has inevitably increased the quantity of automobiles on the road. A loss of human life occurs as a consequence of the ensuing traffic congestion and traffic jams, may present serious challenges to emergency vehicles carrying important patients, such as ambulances. We have reportedly developed "Smart Ambulance Tracking System Using IOT" to partially address this issue.

## I. INTRODUCTION

The rapid rise in vehicle numbers, which has grown significant following the startling increase in global population, is one of the most significant effects of modern technology development. As a result, traffic congestion is now a major issue in the majority of the world's nations. Furthermore, in nations like India, the rate of road expansion is just one-third that of vehicle growth, which makes the issue even worse. Traffic congestion has increased as a result of increased traffic, which makes it difficult for ambulances to transport patients to the right locations on time in an emergency. According to statistics, more than 20% of those who require immediate medical care pass away on the way to the hospital as a result of delays. Consequently, the Geneva Programme Centre of the International Road Federation, there are 3,000 fatalities on the roads every day. This roughly translates to 1.3 million yearly fatalities from traffic collisions and 2.4 million overall. Among the established causes of deaths is the inability of the ambulance to get to the scene of the accident and subsequently to the hospital in because of delayed emergency services.

## II. RELATED WORK

The comprehensive traffic light control system for the emergency ambulance service is the system that is acting in suggested. whenever a rescue ambulance approaches, the traffic signals can be managed quickly and effectively. The model is widely used to monitor and manage the movement of cars through intersections on various routes. Due to the huge volume of traffic and the variety of vehicles involved, this causes congestion and snarled traffic in urban areas and big cities. This applies to emergency ambulances passing through the same crossroads of vehicles during rush hour. As a result, an automated traffic light system ensures a smooth and unhindered path for an ambulance to its destination.[1]

The proposed system is prototyped utilising a microcontroller, different communication modules, and LED displays to imitate a real-world situation. This essay focuses on various traffic control strategies and health monitoring systems. Traffic jams, smart health, medium of communication, microcontroller. The method involves more manual labour than mechanised work. As it can determine the quickest route to the closest hospital, this system has the potential to be fully automated in the future. If an ambulance stops at a light, the signal will automatically change to reflect the direct route to the hospital. More time is saved as a result, and the patient is transported to the hospital as quickly as is practical. The paper discusses

directing traffic at a signal, but what about several scenarios in which an ambulance becomes trapped? IOT is a gateway for many "things," however due to the high implementation costs, this system is not widely used, particularly in conventional ambulances. [2]

### III. PROPOSED ALGORITHM

#### A. Project Description:

A centralised monitoring system with information on the location of the ambulance and the accident victim's vehicle is necessary in the hospital. In order to properly administer medication and choose a destination for transportation, the doctor must be aware of the patient's physical and physiological state. As a result, communication is required between the ambulance team and the monitoring station. The need can be addressed by employing an ambulance system that provides patient status information and location information in a unique way using factors like temperature and heart rate. Biomedical sensors are necessary for the system to relay patient status.

Wireless communication, which transfers information and data, links all systems together. Systems will be more efficient and responsive with increased communication linkages using GPS and GSM modems. Traffic control is still necessary when transporting emergency patients so that important reaction time can be preserved. To send a weak signal, the system will be interfaced with a wireless RF module. The method will be found to be highly helpful for treating patients in need Throughout the course of their transfer if all these parameters are met. By including four units—the ambulance unit, the monitoring unit, the vehicle unit, and the signal unit—the proposed project satisfies all requirements. This project's objective is to develop a system for continuously keeping an eye on the patient's body using internet connectivity. The goal of this system is to assess a few biological aspects of the patient's body, such as body blood pressure, temperature, and heartbeat pressure. The sensors will take measurements of the patient's body temperature, heart rate, and blood pressure and transmit the results to an IOT cloud platform through a Wi-Fi module. The patient's whole medical record will be stored in the cloud, enabling the doctor to monitor the patient's health while also tracking the patient's status on his smartphone. The results demonstrated shows the use of Wi-Fi technology in this study can effectively track the health state of patients.

#### System Architecture:

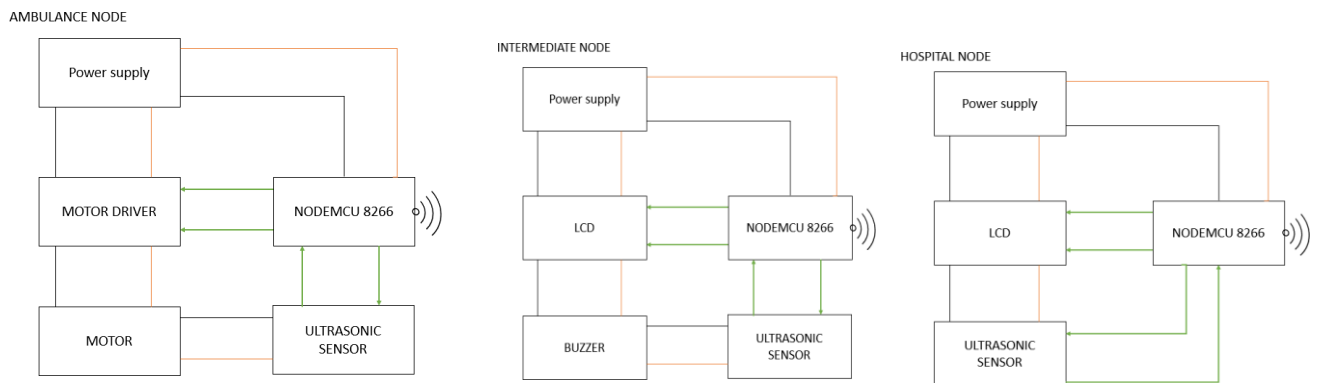


Fig 1: SYSTEM ARCHITECTURE

The installed sensor uses WiFi or cloud networking to communicate with the sensor at the signal when the ambulance starts. The information about the ambulance's arrival is shown on the LCD screen and the buzzer begins to honk to clear the traffic when the message is received at the signal.

This data is relayed to the sensor at the destination and is displayed with the message "1st Signal Reached" as soon as the ambulance reaches the first signal. At the location, the ambulance flashes a message announcing its arrival and the buzzer begins to honk to clear the road of traffic as it gets further away from the signal. Finally, the message "Destination Reached" successfully/safely is displayed as the ambulance arrives at its destination.

1. **Ambulance node:** Node includes a mobility feature as well as a sensor to prevent accidents with other vehicles. The device will stop if it detects any vehicles on the road leading to the hospital. It will keep moving towards the hospital.
2. **Intermediate node:** It will begin warning the user to clear the path for the ambulance so that it may travel more

freely. This node will start to alert whenever the ambulance unit is prepared to move, and after the ambulance passes this node it will stop alerting.

3. **Hospital node:** It will receive the update from the intermediate node and ambulance. The data will be received by this node just as the ambulance has made it through the intermediate node.

#### IV. EXPERIMENTAL RESULTS

The results are displayed as the results of the proposed architecture of the project, having three nodes: Ambulance node, Intermediate node and Hospital node.

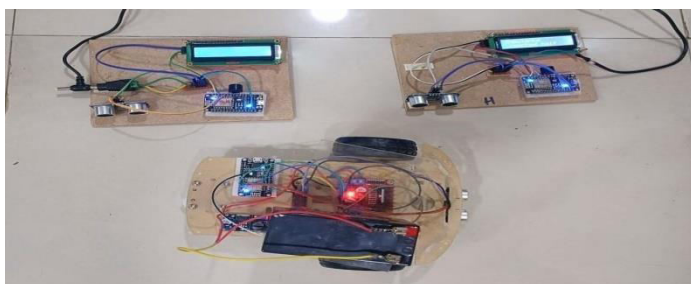


Fig2: Smart Ambulance Tracking System Is Ready To Use.

Figure 2 demonstrates how the prototype model is linked to the power source and is ready for usage.



Fig3: Smart Ambulance Is Turned ON.

Figure 3 demonstrates that the Smart Ambulance prototype is ready for usage and is connected to the power supply.

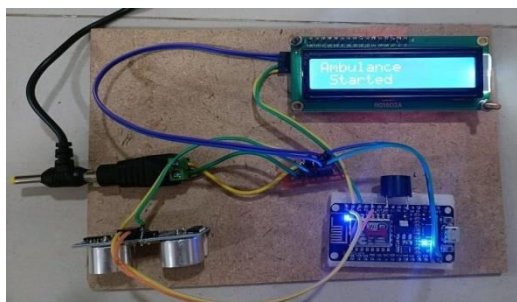


Fig 4: The Middle Node is displaying "Ambulance Started"

The ambulance is started, displayed on the centre node's LCD, and it begins to buzz, as seen in the figure.



Fig 5: The Hospital Node is displaying "Ambulance Started"

Figure 5 demonstrates that the emergency vehicle been initiated, and it is shown on the LCD of the hospital node and begins to buzz.

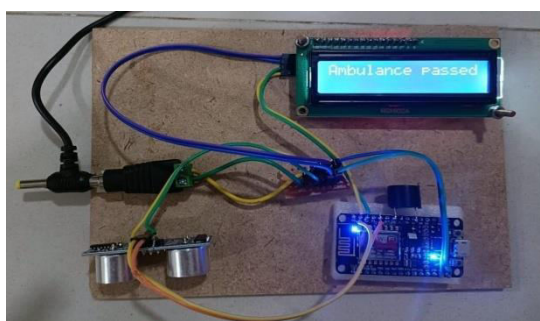


Fig6: The Middle Node is displaying "Ambulance Passed"

Figure 6 depicts how the ambulance passed the middle node, and the LCD of the middle node displays "Ambulance Passed" as a result. It begins to buzz.

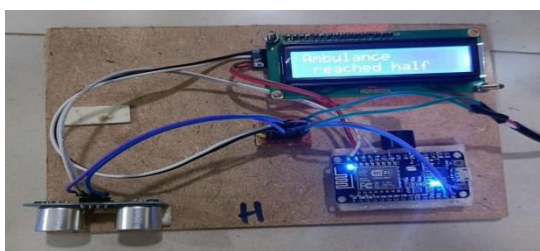


Fig7: The Hospital Node is displaying "Ambulance reached half"

The LCD of the hospital node displays "Ambulance reached half" when The ambulance has made it through the middle node, as seen in figure 7. It begins to buzz.

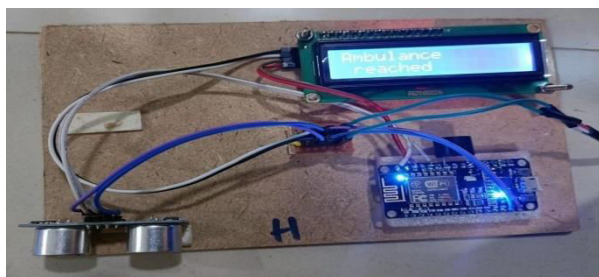


Fig8: The Hospital Node is displaying "Ambulance reached"

The hospital node in the figure 8 displays "Ambulance reached" and buzzes to indicate that the emergency vehicle arrived.

#### V.CONCLUSION AND FUTURE WORK

Since the delay in an ambulance arriving at the hospital, a life is lost. For this issue, we created a clever ambulance tracking system that enables the ambulance to arrive at the hospital in a crisis as quickly as possible, notwithstanding traffic. The hospital node and intermediate node both send out alerts as soon as the ambulance starts, and the ambulance's status is also displayed. Once the ambulance has passed, middle node, it indicates that it has done so. as soon as the ambulance enters the hospital node, it indicates which it is halfway there and begins to buzz. the moment the ambulance exits the hospital node, it indicates that it has arrived. It will shorten the time it takes to transport patients to the hospital.

As technology advances, this system can be adapted to provide smart applications like touch screen controls, mobile applications, etc. We can adjust the new features to the present model and we can improve the functionality of the product, which may need the introduction of a new version, if new requirements arise and if further difficulties are found that are being experienced by consumers.

It's doable to develop this system further. We can choose the closest hospital while in the ambulance, and the hospital's main server will get data regarding the ambulance, including its location.

#### REFERENCES

- [1] Suren krishnan, rajan thangaveloo\*, shapi-ee bin abd rahman & siva raja sindiramutty, "smart ambulance traffic control system", trends in undergraduate research (2021) 4(1): c28-34 <https://doi.org/10.33736/tur.2831.2021>.
- [2] Prof p. R. Rane\*1, manjiri kalambe\*2, pragati bobade\*3, ayushree wankhade\*4, ragini atram\*5, avantika kale\*6,"intelligence ambulance – traffic management system a review article",international research journal of modernization in engineering technology and science volume:03/issue:02/february-2021.
- [3] j.s.femilda josephin, a.alice, and M. Ferni Ukrit nithya," ambulance detection using cross correlation technique", international journal of innovative technology and exploring engineering (ijitee) issn: 2278-3075, volume-8 issue-5 march, 2019.
- [4] Roopashree v student, dept. Of ise bnmit bangalore, india nikitha bai e student, dept. Of ise bnmit bangalore, india dr. Shashikala hod, dept. Of ise bnmit bangalore, india malavika, student, dept. Of ise bnmit bangalore, india suman a student, dept. Of ise bnmit bangalore, india," traffic congestion detection and alerting ambulance using iot", international journal of engineering research & technology (ijert) vol. 9 issue 07, july-2020.
- [5] Mohammad moazum wani samiya khan mansaf alam ,"iot - based traffic management system for ambulances",april 2020.
- [6] Prof. Deepali ahir1, saurabh bharade2, pradnya botre3, sayali nagane4, mihir shah5," intelligent traffic control system for smart ambulance" international research journal of engineering and technology (irjet) | june-2018.
- [7] Ms.avantika sutar1, ms.radhika pimpale2, ms.arati dhadhvad3, mrs.mohua biswas4," iot based smart ambulance monitoring system with traffic light control". June 2022.
- [8] Varsha srinivasan1, yazhini priyadharshini rajesh1, s yuvaraj2 and m manigandan2," smart traffic control with ambulance detection", to cite this article: varsha srinivasan et al 2018 iop conf. Ser.: mater. Sci. Eng. 402 012015.





**INNO**  **SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.379**



**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](http://www.ijircce.com)

Scan to save the contact details