

# **IoT based Traffic Congestion Control Management System for Ambulances**

**Monalisa Samal<sup>1</sup>, Jyostnamayee Behera<sup>1</sup>**

<sup>1</sup>Associate Professor, <sup>1</sup>Department of ECE

<sup>1</sup>Gandhi Institute for Technology (GIFT), Bhubaneswar, India

## **Abstract**

In this quick era, the human has no time for anything. He is totally occupied with his own work and completely committed himself to the purported PCs or portable PCs. A typical man often inclines toward his own vehicle to go to office or work. On the streets, they occasionally conflict with the movement rules, bounce the activity signals and so on. He mostly does this sort of odd exercises to achieve the office on time. In this manner, it sets aside a decent measure of time for us to understand that we must help other people principally the patients in the rescue vehicle. We simply fret over them and don't offer space to the ambulances with the goal that they achieve the clinics soon and will be spared out of peril. Along these lines, this project is intended to clear the activity and give a route to the emergency vehicle so that the patient can be set aside to the greatest degree. The project utilizes RF innovation to actualize this application.

**Keywords:**Arduino, Internet of things, RF transceiver.

## **1. INTRODUCTION**

Lately, Indian has presented a various administration show that coordinates shrewd transportation frameworks with remote, calculation and sensor advancements to supervisory control and information procurement and oversees transportation issues [1]. This has provoked ascent of techniques for catching continuous movement circumstances, different activity location gadgets and comparing controls. With the support from clever specialists, it is conceivable to quick react to crises utilizing discovery gadgets to gather ongoing movement information for street convergence control and operations, in this way effectively decongesting activity in the most limited timeframe. This approach can enhance benefit levels by diminishing postponements from holding up at crossing points and normal driving time.

Presently under the Government's restricted spending plan, not all street intersections can be fitted with an astute detecting framework! Inquiries about and grows practically ready to meet the genuine needs of the sensor framework, you can supplant the current costly detecting framework, understand the boulevards in each of the glimmering lights and absence of activity intersections introduced a smart detecting framework idea. This examination will test for Taiwan second-level street augmentation of movement volume is no settled cruised out activity and no clearly pointed far from pinnacle activity of intersection, to savvy sort sensor recognition expansion activity, then began, records control street trademark records transformation timing and time, decreased driving individuals by means of movement volume no clearly pointed far from pinnacle or expansion activity uncommon of intersection, because of intersection is settled Shi business, records by The creator might want to thank the Ministry of Science and Technology of the Republic of China, Taiwan, for fiscally supporting this exploration delivered of superfluous halted, time, then advancement course kept up more long of activity proceeded into length.

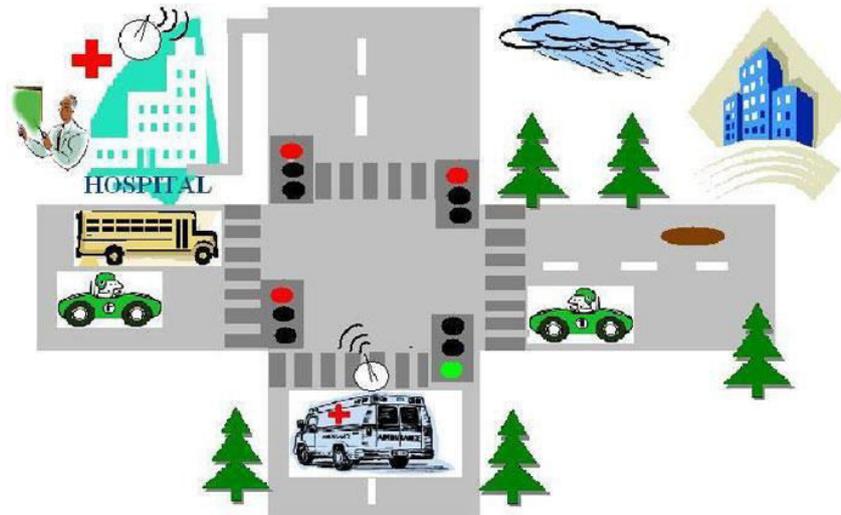


Fig. 1 Architecture of Smart traffic controlling

**2. PROPOSED SYSTEM**

The rescue vehicle will be settled with the RF transmitter and the RF collector will be settled at the movement signals. This transmitter transmits a remarkable code constantly into air. At the point when the emergency vehicle is close to the activity flags, the remarkable code, transmitted by the transmitter from the rescue vehicle, will be gotten by the RF recipient at the movement signals. The controlling unit, in the wake of accepting the information from the RF recipient works the activity flags to permit the emergency vehicle to proceed onward without halting it i.e., the green flag will be given for quite a while so that the rescue vehicle can't be gotten in the movement. This green light will be given until the output of the RF beneficiary changes. The output changes when the RF collector does not get any contribution from the transmitter. After the rescue vehicle has passed away, the activity signs will be worked obviously.

**A. Working**

The Ambulance is setup with one RF Tx module which can be triggered using a small switch. Whenever it reached the signal point then the switch is pressed. The RF Rx module at signal receives the signal from Tx and make the signal to Green.

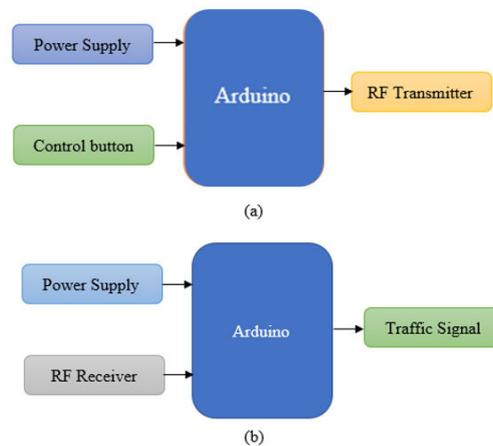


Fig. 2 Block diagram of proposed system.

### 3. HARDWARE DESCRIPTION

#### A. Arduino Uno

Arduino is an open-source electronic platform that is based on connection between hardware and software and it is easy to use and implement. They are designed in such a way that it read the input – water reaches a certain threshold and turn it into an output – sending the aler



B. Fig 2. Arduino board

#### B. RF Module

Radio recurrence (RF) is a recurrence or rate of wavering inside the scope of around 3 Hz to 300 GHz. This range compares to recurrence of exchanging current electrical signs used to deliver and distinguish radio waves. Since the greater part of this range is past the vibration rate that most mechanical frameworks can react to, RF normally alludes to motions in electrical circuits or electromagnetic radiation.

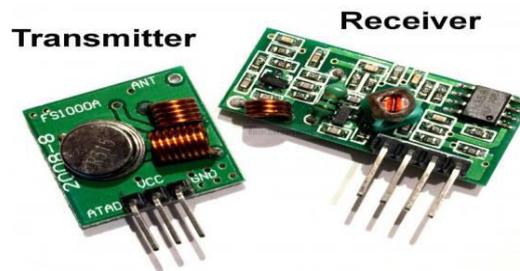


Fig. 5 RF Transmitter and Receiver

#### 1) Properties of RF

Electrical streams that sway at RF have uncommon properties not shared by direct current signs. One such property is the straightforwardness with which it can ionize air to make a conductive way through air. This property is misused by 'high recurrence' units utilized as a part of electric curve welding. Another uncommon property is an electromagnetic compel that drives the RF current to the surface of conductors, known as the skin impact. Another property is the capacity to seem to course through ways that contain protecting material, similar to the dielectric cover of a capacitor. The level of impact of these properties relies on upon the recurrence of the signs.

### 4. RESULTS AND DISCUSSION

This section deals with the hardware setup and the executed results of proposed smart traffic controlling with vehicle tracking system. In this, we must connect RF Transmitter to the vehicle side and RF Receiver is connected to signal point as shown in Figure 6. If the vehicle nearer to the signal the receiver will receive signal and then traffic signal will be a green sign in the way of ambulance or emergency vehicles as disclosed in figure 7. If ambulance receives any message from the hospital, then a switch will be pressed by the driver so that it should send message to the hospital using IoT.

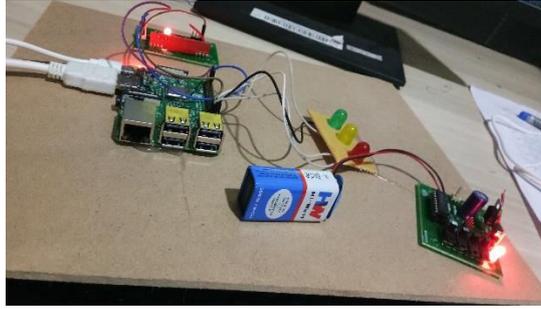


Fig. 6 Hardware circuit of proposed system.



Fig. 7 When red light is on

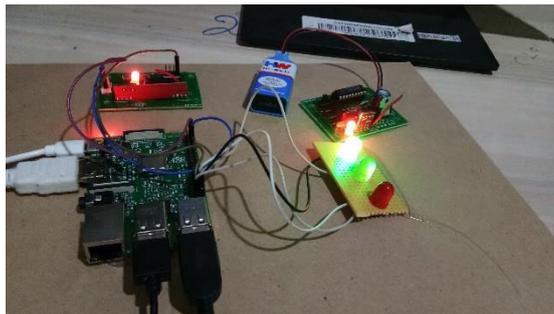


Fig. 8 Green light is ON once a message sent through IoT

## 5. CONCLUSION

Here, we have implemented an IoT-based controlling of emergency vehicles using Arduino Uno. We intended to clear the activity and give a route to the emergency vehicles such as ambulances, so that the patient can be saved to the maximum extent. We utilized RF transceiver for sending and receiving the control signals from the ambulances.

## References

- [1] Pankaj Verma, J.S Bhatia, "Design and Development of GPS-GSM based tracking system with Google map-based monitoring", *International Journal of Computer Science Engineering and Applications*, vol. 3, no. 3, pp. 33-40, 2013.
- [2] SeokJu Lee, GirmaTewolde, Jaerock Kwon, "Design and Implementation Vehicle Tracking System using GPS/GSM/GPRS Technology and Smartphone Application", *IEEE World Forum on Internet of Things (IoT)*, pp. 353-358, 2014.
- [3] R. Ramani, S. Valarmathy, Dr. N. Suthanthira Vanitha, S. Selvaraju, M. Thirupathi, R. Thangam, "Vehicle tracking and locking system based on GPS/GSM", *International Journal of Intelligent Systems and Applications*, vol. 9, pp. 86-93, 2013.

- [4] M. Behzad, A. Sana, M. A. Khan, Z. Walayat, U. Qasim, Z. A. Khan, N. Javaid, "Design and Development of a Low Cost Ubiquitous Tracking System", The 9th International Conference on Future Networks and Communications (FNC) Procedia Computer science at Elsevier, vol. 9, pp. 1-8, 2014.
- [5] M N Kabir, Y. M. Alginahi and A. I. Mohamed, "Modeling and simulation of traffic flow: a case study-first ring road in downtown Madinah", International Journal of Software Engineering and Computer Systems, vol. 2, pp. 89-107, 2016.
- [6] K M Alhendawi, "A new framework for predicting the impact of traffic on the performance of mobile ad-hoc network (MANET): using regression as data mining approach", International Journal of Software Engineering and Computer Systems, vol. 3, pp. 88-105, 2017.
- [7] A.S Sadiq et al., "A developed network layer handover based wireless networks", International Journal of Software Engineering and Computer Systems, vol. 1, pp. 113-122, 2015.