International Journal of Multidisciplinary Engineering in Current Research - IJMEC
Volume 8, Issue 2, February-2023, http://ijmec.com/, ISSN: 2456-4265

TRAFFIC PRIORITY FOR AMBULANCE

Mrs. Manga Geethanjali[1], SK Kusheeda Bee[2], Syed Abdul Muqhit[3], CS MD Azeemuddin[4]
[1]Assistant Professor Department of ECE, Lords Institute of Engineering and Technology Hyderabad, India
2,3,4Department of ECE, Lords Institute of Engineering and Technology Hyderabad, India

Abstract: Traffic congestion is the most common problem nowadays all over the world. Emergency vehicles like ambulance have responsibility to help patients or to reach patients to the hospitals. Due to traffic signals, they may get delay to reach rescue operations which may cause loss of lives. Our project define how traffic lights will detect emergency vehicles, how to manipulate the traffic lights and how to provide free way to emergency vehicles without disturbing the actual traffic

I. INTRODUCTION

Traffic priority for ambulance refers to the ability of emergency vehicles such as ambulance, fire brigade, and police vehicles to move quickly and efficiently through traffic. This is achieved by providing the emergency vehicles with priority over other vehicles on the road, typically by giving them the right-of-way and allowing them to proceed through intersections without stopping. The goal of traffic priority for ambulance is to reduce response time and improve patient outcomes. This is achieved through the use of special signals, such as flashing lights and sirens, and by integrating the ambulance into the Intelligent Traffic Light System, which can automatically adjust traffic signals to give the ambulance a clear path.

II. LITERATURESURVEY

A literature survey on Traffic Priority for Ambulance shows that there has been a significant amount of research in this area, focused on improving response times and ensuring the safety of patients and healthcare providers.

One study by the World Health Organization (WHO) found that traffic congestion can significantly impact ambulance response times, and that implementing traffic priority measures can help to reduce these delays. The study suggested that priority should be given to ambulances at all times, including during non-peak hours, to ensure the quickest possible response times.

Another study by the European Commission (EC) found that the implementation of traffic priority systems for ambulances, such as the use of flashing lights and sirens, can have a positive impact on patient outcomes. The study also emphasized the importance of ensuring that traffic priority systems are consistent and standardized across different countries, to minimize confusion and improve efficiency. Several studies have also looked at the use of Intelligent Traffic Light Systems (ITLS) to provide traffic priority for ambulances. ITLS work by using sensors to detect the presence of ambulances and adjust traffic signals to give them a clear path. These systems have been shown to significantly reduce response times and improve the safety of patients and healthcare providers.

ISSN: 2456-4265

DOI: https://doi-ds.org/doilink/04.2023-21384553

In conclusion, the literature survey highlights the importance of providing traffic priority for ambulance in order to improve response times and patient outcomes. A variety of measures can be used to achieve this goal, including the use of flashing lights and sirens, and integration with Intelligent Traffic Light Systems. However, it is also important to ensure that these systems are consistent and standardized across different countries.

III. WORKINGPRINCIPLE

The traffic priority circuit for an ambulance typically works by sending a signal to the traffic management system, which then changes the traffic light signals to give the ambulance priority. The circuit operates as follows:

1. Activation: The ambulance is equipped with a device that sends a priority request signal to the traffic management system as it approaches an intersection. This signal can be triggered manually by the ambulance driver or automatically through GPS.
2. Receiving the signal: The traffic management system receives the priority request signal and identifies the ambulance's location and direction of travel.
3. Changing traffic lights: The system then changes the traffic light signals at the intersection to give the ambulance priority. For example, it may turn red for cross traffic and green for the direction the ambulance is approaching from.
4. Deactivation: The signal from the ambulance is deactivated when the ambulance has passed through the intersection or when the ambulance driver cancels the request. The traffic lights then return to their normal state.

IV. BLOCKDIAGRAM

TRANSMITER SECTION

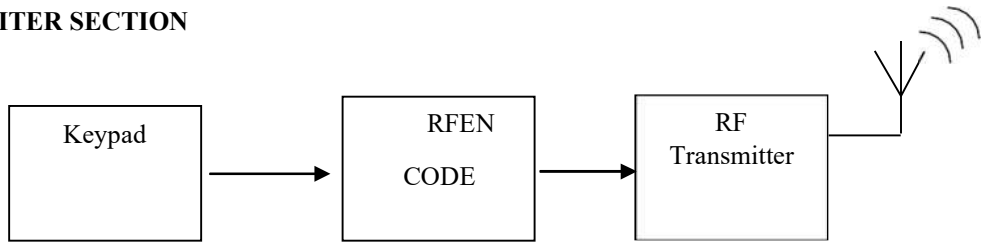


Figure: Block diagram of Traffic priority for ambulance (Transmitter)

DOI: https://doi-ds.org/doilink/04.2023-21384553

RECEVIER

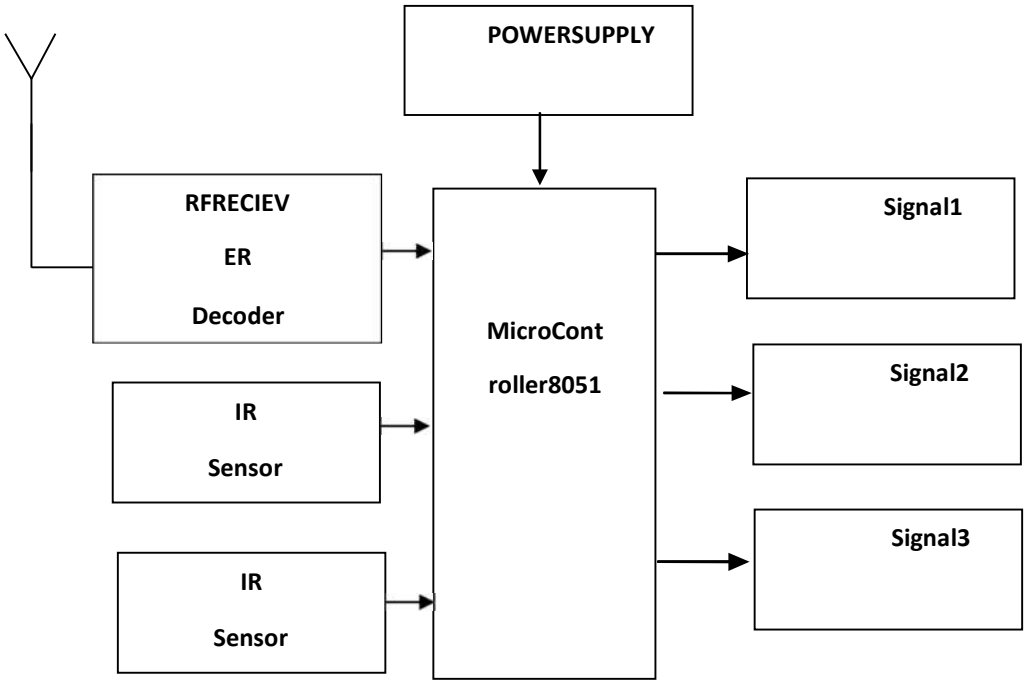
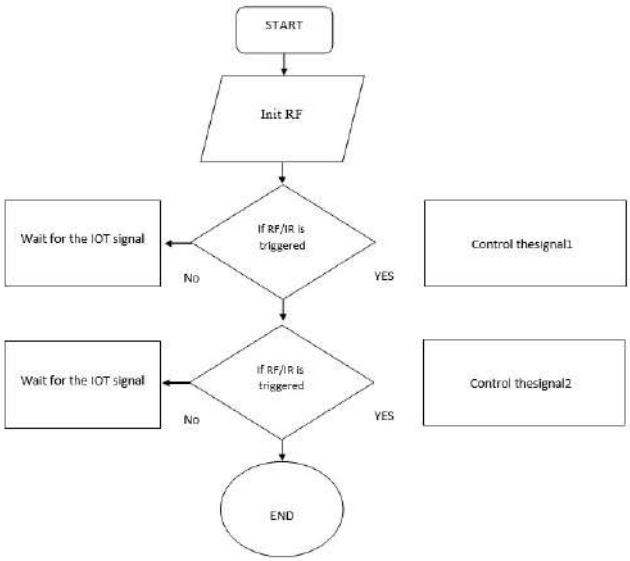


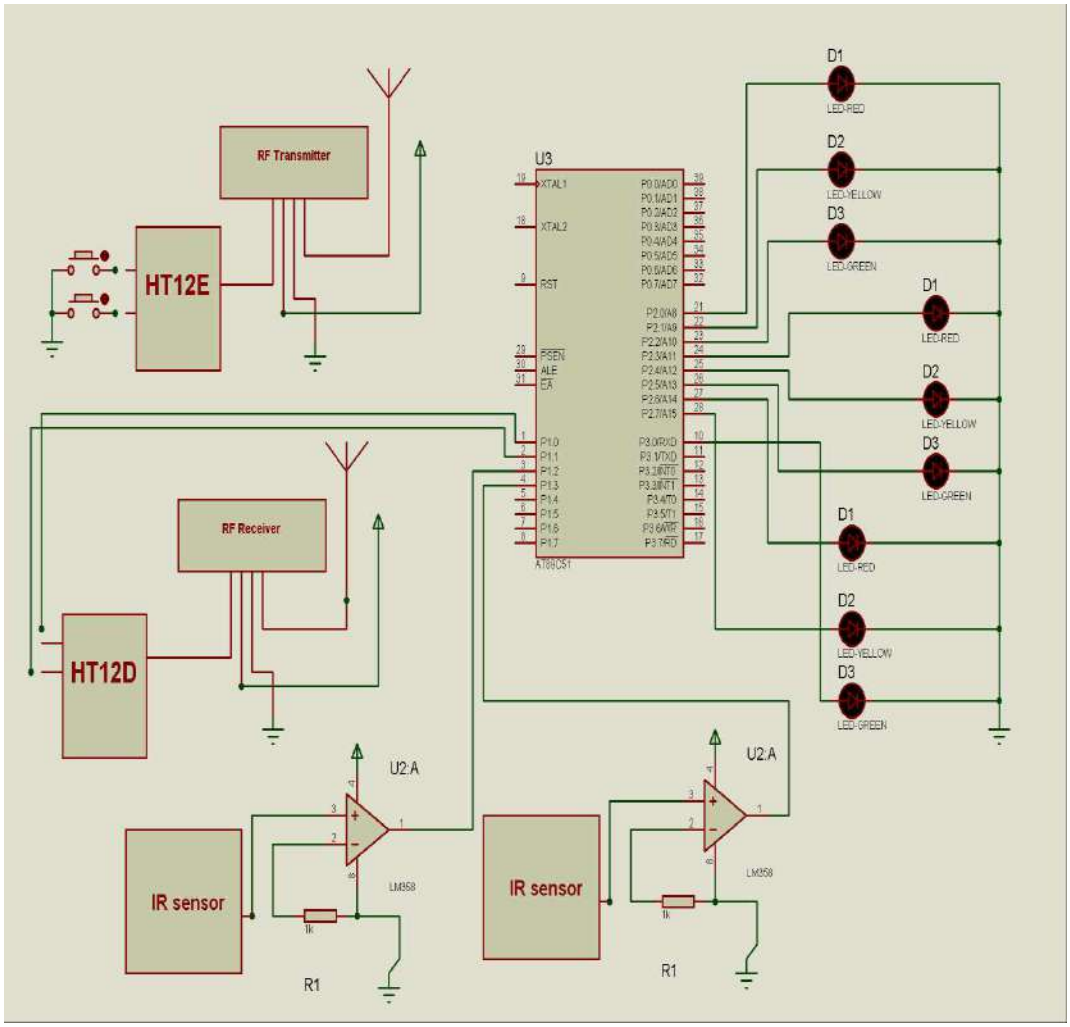
Figure: Blockdiagram of Traffic priority for ambulance (Receiver)

V. FLOWCHART



DOI: https://doi-ds.org/doilink/04.2023-21384553

I. SCHEMATICDIAGRAM:



VI. HARDWAREDESCRIPTION

I.

a. *POWERSUPPLY*

The power supply section is the section which provides +5V for the components to work. ICLM7805 is used for providing a constant powerof+5V.

The ac voltage, typically 220V, is connected to a transformer, which steps down the ac voltage down to the level of the desired dc output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage. This resulting dc voltage usually has some ripple or ac voltage variation.

A regulator circuit removes the ripples and also retains the same dc value even if the input

ISSN: 2456-4265

DOI: https://doi-ds.org/doilink/04.2023-21384553

dc voltage varies, or the load connected to the output dc voltage changes. This voltage regulation is usually obtained using one of the popular voltage regulator IC units.

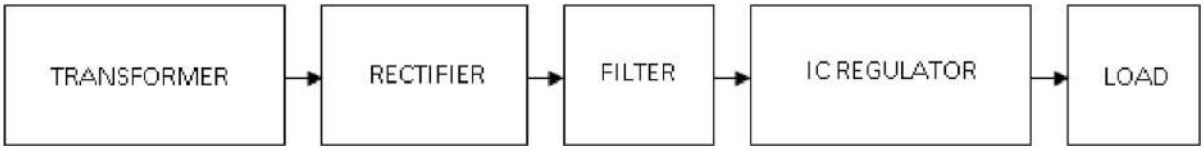


Figure3.1 Block Diagram of Power Supply

b. MICROCONTROLLER

A Microcontroller(or MCU)is a computer-on-a-chip used to control electronic devices. It is a type of microprocessor emphasizing self-sufficiency and cost-effectiveness, in contrast to a general-purpose microprocessor(the kind used in a PC).A typical microcontroller contains all the memory and interfaces needed for a simple application, where as a general purpose microprocessor requires additional chips to provide these functions.

A microcontroller is a single integrated circuit with the following key features:

- central processing unit - ranging from small and simple 8-bit processors to sophisticated32- or64-bitprocessors
- input/output interfaces such as serial ports
- RAM for data storage
- ROM, EEPROM or Flash memory for program storage
- Clock generator - often an oscillator for a quartz timing crystal, resonator or RC circuit Microcontrollers are inside many kinds of electronic equipment.

They make up the lion's share of all available processing chips. 20% of controllers are more sophisticated digital signal processors (DSPs), while over 50% are "basic" controllers (ref?). One or two general-purpose microprocessors and between one and twenty microcontrollers are likely to be found in a typical developed rural house. Up to 50 microcontrollers or more are common in mid-range vehicles. They are also present in practically every electrical appliance, including cellphones, microwave ovens, and washing machines.

A. RFMODULE(RadioFrequency)

Radio frequency is any frequency in the electromagnetic spectrum that has to do with the spread of radio waves. When an RF current is sent through an antenna, it creates an electromagnetic field that can move through space. RF fields are used in a lot of wireless technologies.

DOI: https://doi-ds.org/doilink/04.2023-21384553

Receiver Module

Transmitter

ModuleFigure3.9RF Modules

Radio waves. The spectrum of frequencies from 10 kilohertz to 300 gigahertz that may be utilised for wireless transmission. This is a radio frequency. Also used to describe the energy that may be picked up by a wireless receiver, such as the radio signal broadcast by the system's transmitter.

- Wireless mouse, keyboard
- Wireless data communication
- Alarm and security systems
- Home Automation, Remote control
- Automotive Telemetry
- Intelligent sports equipment
- Handheld terminals, Dataloggers
- Industrial telemetry and tele–communications In-building environmental monitoring and control.

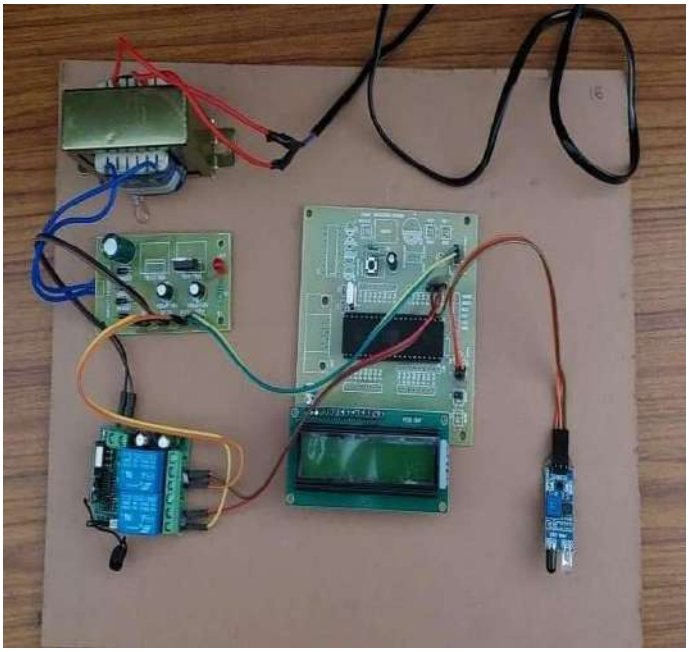
d. *IRSENSOR*

If you want to build a robot that can avoid obstacles or follow a line, an infrared (IR) sensor is a must-have. We'll be building a basic infrared (IR) sensor capable of sensing objects between 7 and 10 centimetres away. An infrared (IR) sensor is only a diode with high sensitivity to IR. As a pair, the infrared transceiver and transmitter are abbreviated as IRTX-RX..

ISSN: 2456-4265

DOI: https://doi-ds.org/doilink/04.2023-21384553

VII. RESULT & DISCUSSION



II.

Figure: ReceiverSide

Figure: Transmitting Side

DOI: https://doi-ds.org/doilink/04.2023-21384553

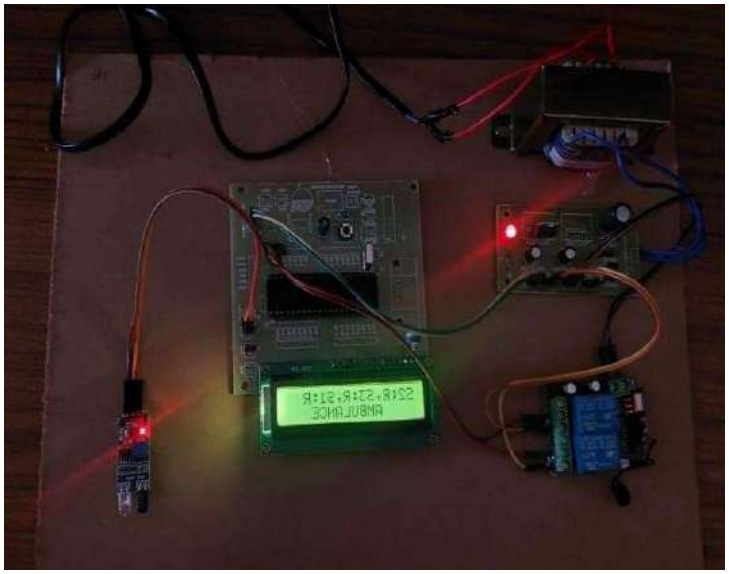


Figure: Working

VIII.CONCLUSION

The "**Traffic Priority for Ambulance"** has been successfully designed and tested. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and place dc are fully thus contributing to the best working of the unit. Secondly using highly advanced IC's and with the help of growing technology the project has been success fully implemented

IX. REFRENCES

[1] Prasanna JL,Lavanya D,Kumar TA. Condition monitoring of a virtual solar system using IoT. Proc.2nd Int. Conf. Commun. Electron. Syst. ICCES 20172018;2018–Janua:286–90.

a. AdhyaS, SahaD, DasA, JanaJ, SahaH. An IoT based smart solar photovoltaic remote monitoring and contro lunit. 2016 2nd Int. Conf. Control. Instrumentation, Energy Commun. CIEC 2016 2016; 432–6.

b. Kandimalla J, Kishore | D Ravi. 6 International Journal for Modern Trends in Science and Technology. J. Mod. Trends Sci. Technol.2017;03:16–21.

[2] B Derin SVBAGASK. IoT based Solar Monitoring System. SSRN Electron. J.2016;3:1–18.

[3] AhraryA, InadaM, Yamashita Y.Solar power monitoring system "SunMieru." Innov. Syst. Technol.2018;73:216–24.

[4] Deshmukh NS, Bhuyar DL. A

a. Smart Solar Photovoltaic Remote Monitoring andControlling.Proc.2ndInt.Conf.Intell.Comput.ControlSyst. ICICCS20182019;67–71.

[5] Gupta A, Jain R, Joshi R, Saxena R. Real time remotesolar monitoring system. Proc. - 2017 3rd Int. Conf.Adv.Comput.Commun.Autom.(Fall),ICACCA20172018;2018–Janua:1–5.

DOI: https://doi-ds.org/doilink/04.2023-21384553