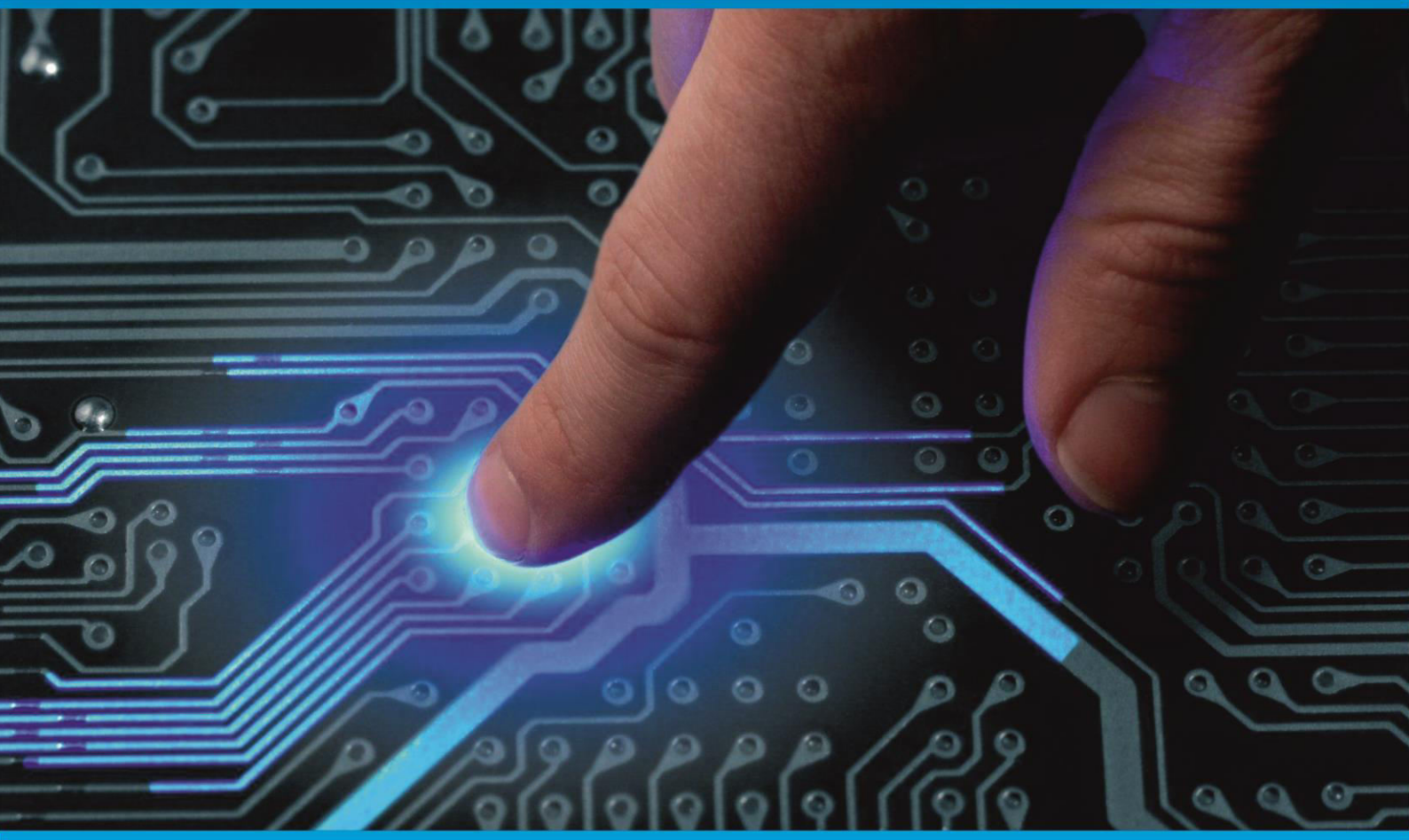
IJIRCCE

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



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903025 |

An Intelligent Ambulance with Automatic Traffic Control

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ABSTRACT: With a large population and large amount of vehicles there is lot of road accidents happenings now a days, and there is also a problem of delay in first aid service with these overcrowded roads.To overcome this delay in first aid service this describes a solution that is "Intelligent Ambulance with Automatic Traffic Control" which includes the alerting and tracking mechanism with automatic traffic light controlling system, the ambulance can achieve a free way in order to provide the first aid to patient as fast as possible. This project is implemented using ARDUINO UNO development board with ZIGBEE module and also tested and validated for different scenario.

KEYWORDS: ARDUINO UNO, ARDUINO Nano, Zigbee, LCD Display and Traffic Lights.

I.INTRODUCTION

Road traffic congestion become a major issue for highly crowded metropolitan cities.According to Times of India, 30 percent of death are caused due to delay ambulance to reach at hospitalHuman life is affected due to delay in the arrival of ambulance. The ambulance is not able to reach the hospital in golden hour. It gets stuck in the traffic signals. It would be great use to patient, if the traffic signal in the path of the ambulance are ON. To avoid unnecessary traffic signal changes we cross refer the ambulance current location using Zigbee and displaying in the LCD.Controlling traffic signals plays a major roll to avoid congestion on the road. System is designed to reduce the delay of the ambulance.The system provide communication between ambulance and traffic signal for traffic congestion is reduced.

II.RELATED WORK

GSM (Global System for Mobile Communications), it send the location of the accident to the ambulance section. The buzzer produces sound when accident occurs. Here, wireless technologies are used for information transferring. When the ambulance reaches the traffic junction, the encoder convert the serial data into parallel data when it passes from the transmitter to the receiver. If the signal is red, it automatically changes to green. The decoder in the receiver section convert the parallel data into serial data when it sent back. This helps the ambulance to cross the traffic junction as soon as possible The prioritized traffic switching is done priority wise if two ambulances are coming at the same time, the ambulance which will arrive first at the traffic junction will be given the priority to cross traffic junction before the next ambulance arrives.Inthis paper we have successfully designed and analysed an automatic traffic light controller for emergency vehicle. Peripheral interface controller (Arduino) is used as the microcontroller and the system can be operated wirelessly using radio frequency (Zigbee) during emergency casesIn proposed system we are trying to reduced the delay for the ambulance and finding the shortest path and displaying the arrival of the ambulance and alerting the ambulance red signal among the crowd.

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III.PROPOSED SYSTEM

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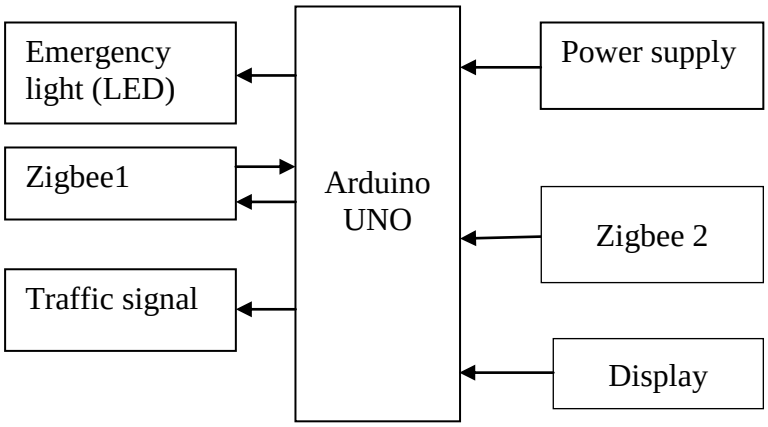
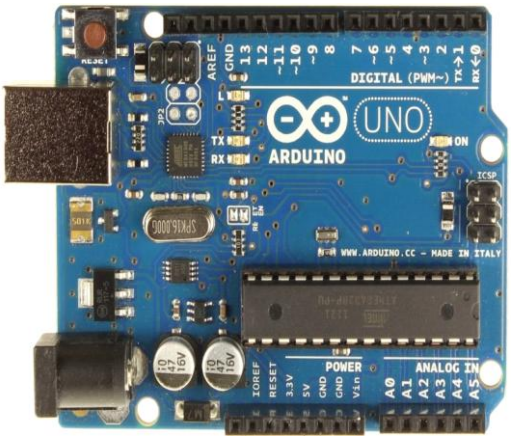


Aim of the proposed system Ambulance contained Zigbee with Arduino Nano. Zigbee is used to find the location of the ambulance and its help to the hospital ready to start the treatment. Arduino UNO is used to control the traffic situation Also it saves the ambulance from traffic problem and makes it to the hospital quickly.



The ATmega2560 is a Microcontrollerand aoperating voltage of this microcontroller is 5volts. Recommended Input Voltage will range from 7volt to 12volt input voltage and it ranges from 6volt to 20volt. The digital input/output pins are 54, where 15 of these pins will supply PWM OUTPUT.Analog Input Pins are 16mADC Current for each input or output pin is 40 mA DC Current used for 3.3V Pin is 50 mAFlash Memory like 256 KB where 8 KB of flash memory is used with the help of boot loader.The Arduino UNO is a microcontroller board, based on the ATmega1280. It has 54 digital input/output pins of which 14 can be used as PWM outputs 16 analog inputs, 4 UARTs hardware serial ports, a 16 MHz crystal oscillator, a USB connection, power jack, ICSP header, and reset button. It contain everything need to support for the microcontroller. Simply, it connect to a computer with a USB cable or power with a AC-to-DC adapter or battery to get started. The UNO is compatible with most shield designed for the ArduinoDuemilanoveor Diecimila.Zigbee communication is specially built for control and sensor networks on IEEE 802.15.4 standard for wireless personal area network (WPANs), and it is the product from Zigbee alliance this communication standarddefine physical and Media Access Control (MAC) layers to handle many devices at low-data rates. These Zigbee's WPANs operated at 868 MHz, 902-928MHz, and 2.4 GHz frequencies. The data rate of 250 kbps is best suited for periodic as well as intermediate two-way transmission of data between sensors and controllers.

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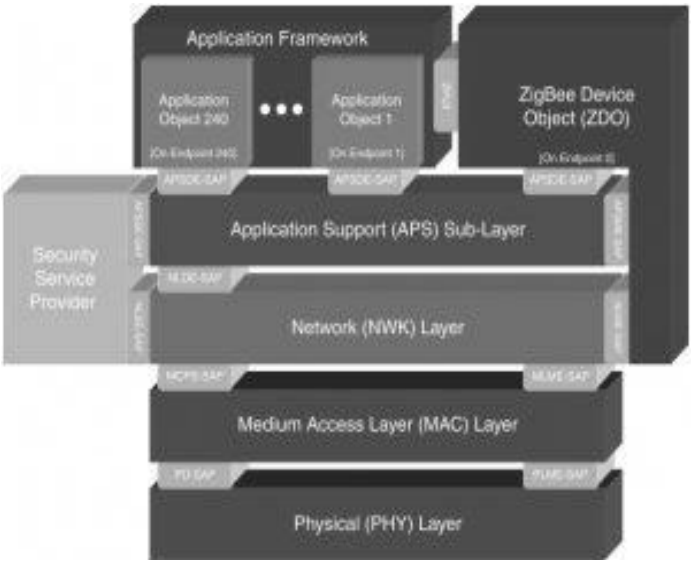
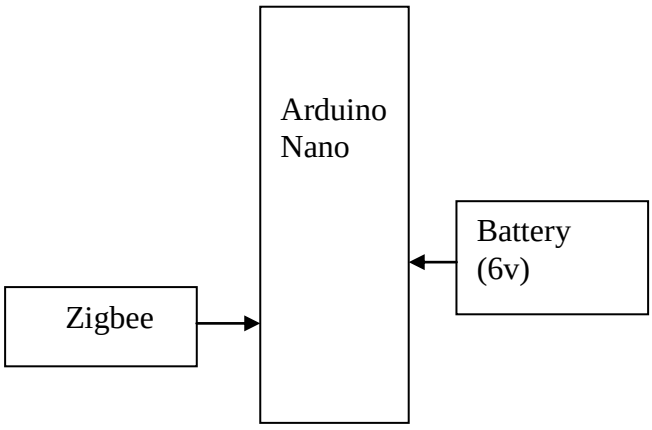


The specification of IEEE 802.15.4 Zigbee mainly includes two devices like Full-Function Devices (FFD) as well as Reduced-Function Devices (RFD). An FFD Device perform a different tasks which are explained within the specification & it can adopt any task within the network. An RFD Device has partial capabilities so it performs limited tasks and this device can conversely with any device within the network. It must act as a pay attention within the network. An RFD device can conversely with an FFD Device & it is used for simple applications such as controlling a switch by activating and deactivating. In an IEEE 802.15.4 n/w, the Zigbee devices plays three different roles like Coordinator, PAN Coordinator & Device. Here, FFD devices are Co-ordinator as well as PAN Co-ordinator whereas the Device is either an RFD/ FFD Device. The main function of a co-ordinator is for relaying messages. In a personal area network, PAN controller is an essential controller and a device is known as the device is not a co-ordinator.



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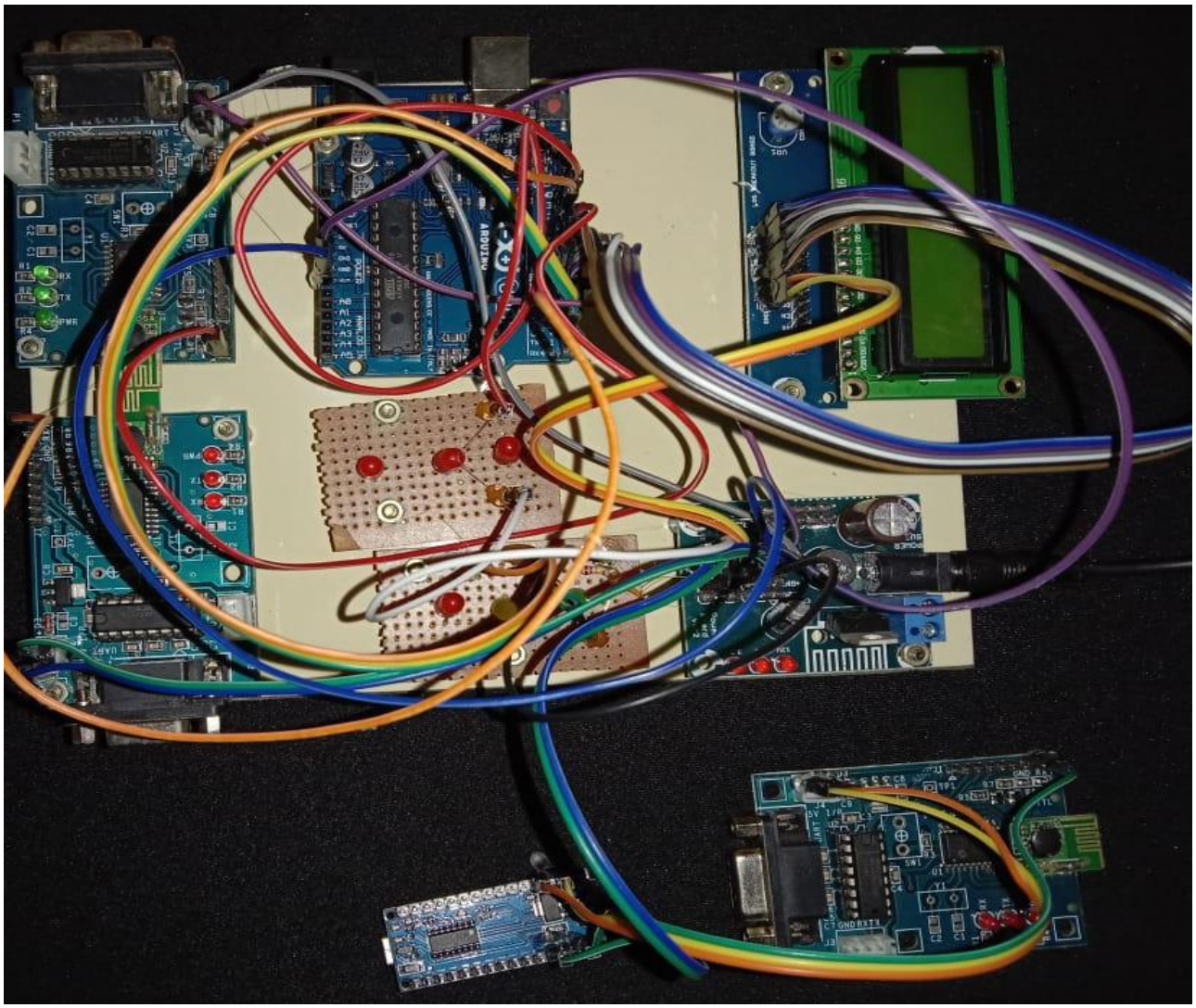
IV.RESULTS



V.CONCLUSION AND FUTURE WORK

The system does not give the shortest path to the hospital neither the signal change automatically. The system is more manual than automatic. In the future scope, the system could be made completely automated as it could find the shortest path to the nearest hospital and if the ambulance halts at the signal, then the signal changes automatically green and it display the arrival of the ambulance. it saves the time and giving first aid to patient on time.

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SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

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