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Make Way for Ambulance Using IOT

Usha.N.S¹, Aritha. S², Viswathika.S³

Professor, Department of Computer Science and Engineering, S.A Engineering College, India¹

UG Student, Department of Computer Science and Engineering, S.A Engineering College, India^{2,3}

ABSTRACT: Traffic in metropolitan cities have increased enormously. Due to increase in population and the increased use of automobiles it has become a huge challenge for emergency vehicles like ambulance to pass through in emergency situations. We have proposed the use of GPS module to track the ambulance and sound sensor to detect the frequency of the siren. With these modules accessed via Node MCU, traffic signals are adjusted and controlled for the ambulance to pass through the traffic.

KEYWORDS: GPS module, Vehicle, ambulance, sound sensor

I. INTRODUCTION

India is one of the fast growing financial country and stands second highest in population. Due to the rapid urbanization and increase in the population, traffic control in the cities has become a great challenge. Increased traffic causes a great struggle for emergency vehicles to transport in emergency situations.

Internet of Things (IoT) is currently one of the popular technologies worldwide. Government, academia, and industry are involved in different aspects of research, implementation, and business with IoT. IoT cuts across different application domain verticals ranging from civilian to defence sectors. These domains include agriculture, space, healthcare, manufacturing, construction, water, and mining, which are presently transitioning their legacy infrastructure to support IoT. Today it is possible to envision pervasive connectivity, storage, and computation, which, in turn, gives rise to building different IoT solutions. IoT-based applications such as innovative shopping system, infrastructure management in both urban and rural areas, remote health monitoring and emergency notification systems, and transportation systems, are gradually relying on IoT based systems. Therefore, it is very important to learn the fundamentals of this emerging technology.

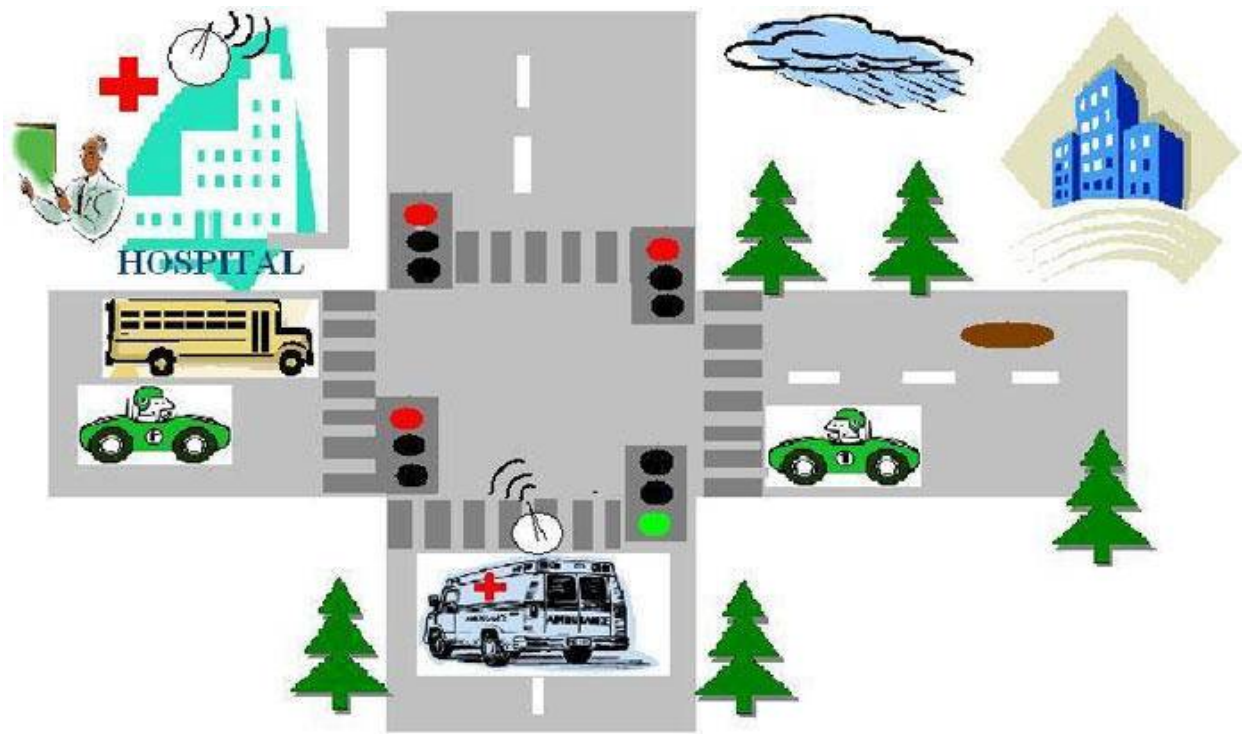
GPS module sends the location to track the position of the vehicle in real time. It is used to provide a best cost efficient solution. Sound Sensor is used to detect the frequency of the siren from the ambulance. Arduino Uno is a prototyping platform which uses hardware and software for development and processing. It is very easy to implement Arduino, As its coding mechanism are very simple and easy to program it

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II. LITERATURE SURVEY

The process of clearing the traffic jam using significant way is more important to save lives. The traffic signals are controlled and the green signal is ON in the path of ambulance to move on freely.

GPS is network system which is used to find the exact location and the velocity and it also works 24 hours a day in all the situation and in all the weather conditions anywhere anytime in the world

GPS receivers in the ground station and which is used to find position and the time anywhere on the world it will notice the moving point and number of visible satellite. GPS module we will calculate time and velocity

Features of GPS module

1. Adopts 12 ch highly accurate GPS module with GPRS/GSM two channels to transmit vehicle info and commands sending and receiving
2. Built-in 2 ch high and 1 ch low volt detection which can be used for customized use
3. Built in lithium iron battery for backup that can continue to work for 4 hours and more
4. Emergency button to help driver calling police for help
5. Full functional of car control and protection: door open alarm shock sensor ,over speed alarm ,towing alarm,geo fence and etc
6. Stable reliable battery to make sure long time working and preven tfrom being destroyed by thunder and water,

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7. GPS tracker leaves more communication port for future upgrading

III. RELATED WORK

The four road is a narrow section of road or a junction that employs many traffic flow. Many methods for implanted to clear traffic. Already existing methods have some drawbacks such as time limit duration may increase in such case we need to improve the method to control the traffic signal

A. Automatic Signal Control System

In this module, for experiment purpose, we have used passive RFID tags and RFID reader with frequency 125 KHz. RFID tag, when vehicle comes in the range of the receiver will transmit the unique RFID to the reader. The microcontroller connected to the RFID reader will count the RFID tags read in 2 minute duration. For testing purpose, if the count is more than 10, the green light duration is set to 30 seconds, if count is between 5 and 9, the green light duration is set to 20 seconds. If the count is less than 5, the green light duration is set to 10 seconds. The red light duration will be for 10 seconds and orange light duration will be for 2 seconds.

B. Stolen Vehicle Detection System

In this module, for testing purpose, we compare the unique RFID tag read by the RFID reader to the stolen RFIDs stored in the system. If a match is found, then the traffic signal is immediately turned to red for a duration of 30 seconds. Also an SMS is sent specifying the RFID number by using SIM300 GSM module. The LCD display will indicate that stolen vehicle is present

C. Emergency vehicle clearance system

In this module, there are 2 parts, first part which is ZigBee transmitter is placed in the emergency vehicle. When the switch is pressed, it will transmit the signal. The signal contains unique id and security code. The transmitter contains PIC16F877A microcontroller and ZigBee module. The microcontroller sends the commands and data to the ZigBee via serial communication. Second part is the receiver, which is placed at traffic pole. It also contains PIC16F877A microcontroller and ZigBee module. The receiver compares the security code received to the security code present in its database. If it matches, then it will turn the green light on. For testing purpose, we used short range RFID reader in our prototype. First, the receiver part is turned on. The red and green signal will be on for 10 seconds duration and orange light will be on for 2 seconds duration one after the other. Secondly, we bring the RFID of stolen vehicle into the range of RFID reader. Then the signal will turn to red for duration of 30 seconds and a SMS is received. Thirdly, we bring 12 RFIDs into the range of RFID reader, and then the green light duration will change to 30 seconds.

IV. PROPOSED SYSTEM

Emergency situation takes place in all time. Traffic will be controlled by the method "MAKE WAY FOR AN AMBULANCE USING IOT" .It is very much useful in Indian road system .And also the effective way to reach hospital easily

Node MCU

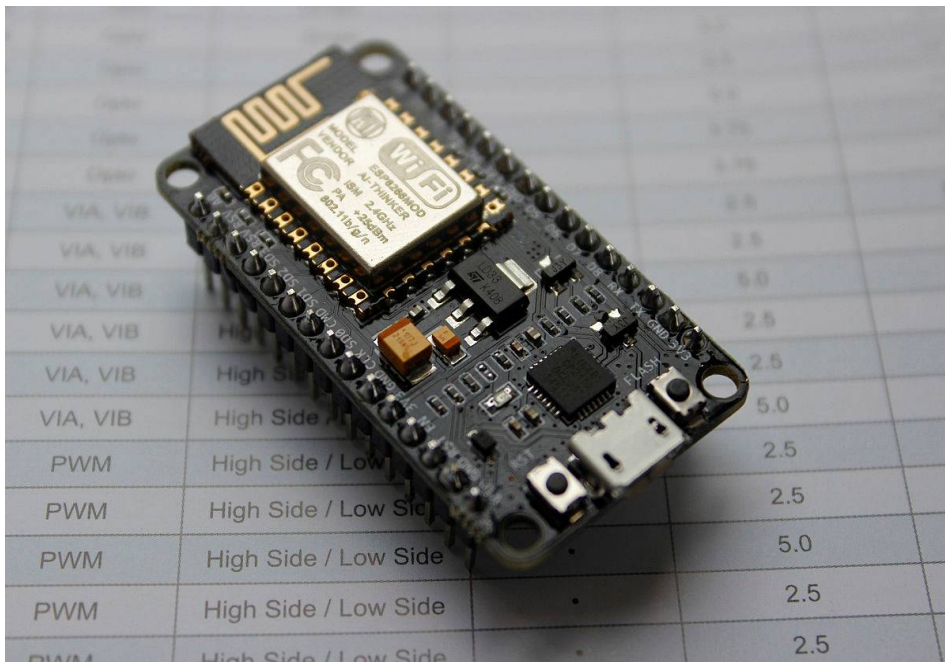
Node MCU is an open source IOT platform. It includes firmware which runs on the ESP8266 Wi-Fi and hardware which is based on the ESP-12 module. The term "Node MCU" by default refers to the firmware rather than the dev kits. The firmware uses the LUA scripting language

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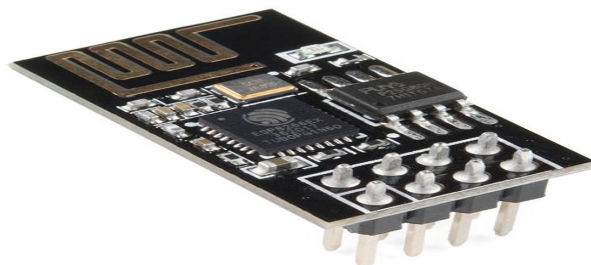
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ESP 8266

The ESP8266 WIFI Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WIFI network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your Arduino device and get about as much WIFI i-ability as a WIFI Shield offers (and that's just out of the box)! The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.



Sound sensor

The Sound Sensor is a small board that combines a microphone and some processing circuitry. It provides not only an audio output, but also a binary indication of the presence of sound, and an analog representation of it's amplitude.

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GPS Module

GPS stands for Global Positioning System by which anyone can always obtain the position information anywhere in the world.

Space segment (GPS satellites)

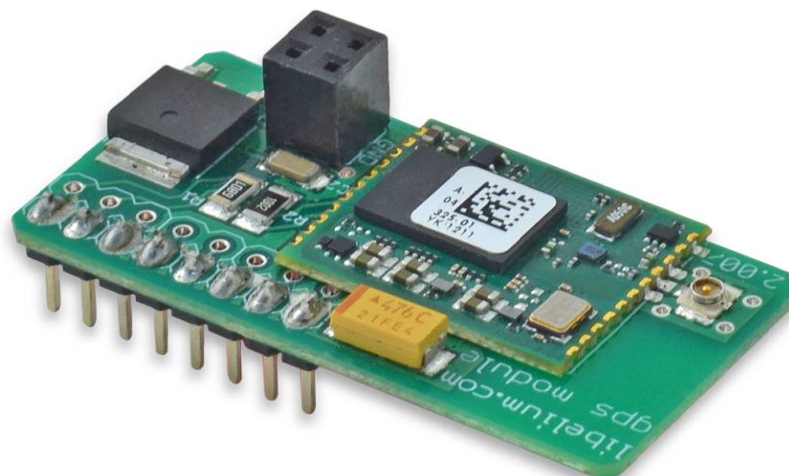
A number of GPS satellites are deployed on six orbits around the earth at the altitude of approximately 20,000 km (four GPS satellites per one orbit), and move around the earth at 12-hour-intervals.

Control segment (Ground control stations)

Ground control stations play roles of monitoring, controlling and maintaining satellite orbit to make sure that the deviation of the satellites from the orbit as well as GPS timing are within the tolerance level.

User segment (GPS receivers)

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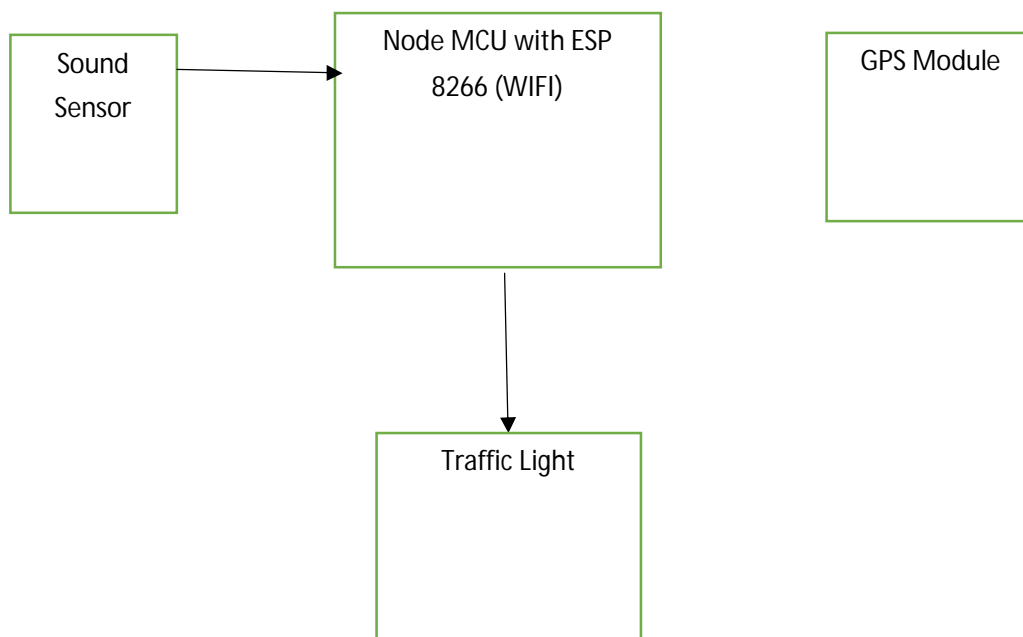
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Due to the rapid urbanization and endless increase in the population traffic in the cities are also increased so it need a solution to control the traffic for ambulance. GSM module is used to track anywhere in the earth. The main component of GPS is vehicle tracking project .GPS module sends data related to tracking position in real time



V. CONCLUSION

Human life is very valuable one so they should be conscious and follow the safety measures. By using the smart ambulance system. We can change the traffic signal to green and control the traffic system. This method also reduce the cost. Many smart system with IOT and sensor were developed for providing automated environment to human life .This will help the ambulance to save human life

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