

RFID BASED AUTOMATIC LANE CLEARANCE FOR AMBULANCE

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Abstract: The active fields of research with applications in industry and academia has increased rapidly over few decades, city logistics and last mile logistics in urbanization. As traffic jam has become an most issue due to increase of road networks and vehicles. Now a days it became a most common problem for vehicle users to stuck in the middle of traffic jam for several hours. Traffic jam has severe impact on social health and national economies. This project presents an intelligent traffic control system to pass an ambulance smoothly it is done by implementing RFID system. Every vehicle is equipped with a Wi-Fi module which acts as a receiver and the hotspot in ambulance act as a transmitter the power is measured by the received signal is denoted as RSSI. This system is automatic switching of signals in order to help ambulance to reach the hospital on time during emergency situation and to intimate the vehicle drivers who are nearby to the ambulance.

Keywords: RSSI, RFID, WIFIMODULE, TRANSMITTER, HOTSPOT, INTELLIGENT TRAFFIC LIGHT.

I. INTRODUCTION

Gridlock is a condition in vehicle that is described by more slow rates, longer outing times, and expanded vehicular queueing to accomplish ideal traffic signal control to give freedom to any crisis vehicle and to abbreviate its movement time, we propose a distance based crisis vehicle dispatching calculation. The sensor detects the presence of crisis vehicles. The crisis vehicles are ambulance, fire motors and squad cars

.Due to increase in transport congestion, vehicle take more time to move and start lining up at traffic signals. This increases the waiting time of the ambulance due to slow moving vehicles, which in turns leads to time delay in taking a patient to the hospital during emergency situation. Everyone probably experienced the emergency vehicle alarm ordinarily when you are stuck in the rush hour gridlock. In spite of the fact that everybody positions god for the security of the patient inside the rescue vehicle. A great many people don't have the foggiest idea about the difficulties of an emergency vehicle trip. If you have a drawn outpatient who needs consistent clinical help, at that time you comprehend the battles of the rescue vehicle travel. At whatever point your relative or somebody you know experiences a health related crisis the first thing one does is to call a rescue vehicle. This vehicle breezes through the traffic and takes a sick patient to the medical clinic consideration they get the higher the odds of their condition settling.

Be it mishaps or basic ailments ambulances give the essential medical aid the patient requires. Additionally, often, they will want to save the patient's lives. To take a patient securely to the home or emergency clinic, this vehicle is consistently prepared, and it is more secure than any of your vehicles.

II. RELATED WORKS

2.1 Smart Traffic Control System with Application of Image Processing Techniques

For determining traffic congestion here, the author have used image processing techniques. They calculated the total density by evaluating over all space engaged by vehicles on the lane taken it as traffic density. In this paper they came up with a technique that founds that total amount of pixels in a video frame is proportional to the amount of area associated with vehicles on the road instead of determining number of vehicles. And the drawback here is we have to set up each model on each side in interconnecting junctions. Here they set two factors as outcomes variable traffic cycle and stand by time for each lane depends on traffic density.

2.2 Automatic Lane Clearance System for Emergency Vehicles

In this paper Author concentrated on Traffic Management System for Ambulance, Traffic Congestion Control, Control Signal contravention and Tracking stolen vehicles. This project mainly helps us in emergency vehicles and in stolen vehicles. The system is automation, and it needs requires fewer manual works. By this we can easily track the stolen vehicles. So that emergency vehicles will reach on time. When the vehicle reaches the lane that particular side alone will turns green until the vehicle crosses the lane. Drawback here is it costs high. And the sensor used in the project will be affected by the environment. It saves the maximum time in congestion. The signal changes here automatically.

2.3 Adaptive Traffic Signal Control System Using Camera Sensor and Embedded System

This project is implemented in embedded systems. Here they have used Principal Component Analysis to analysis and classify the vehicles on video frame. For calculating the duration each signal waiting time, they have used Distributed Constraint Satisfaction Problem (DCSP) method on account of counted number of vehicles on each road. The system is implemented using BeagleBoardTM and AVR microcontroller. The main drawback here it lacks on weather condition and camera viewpoint. System accuracy can be improved by modifying the algorithm.

2.4 An Internet of Things Based Real Time Traffic Light Control to Reduce Vehicles CO2 Emissions

The authors mainly concentrated main to reduce the carbon dioxide level which vehicle emits at the inter junction. Here they used MQ7 sensor as main component. They used IOT architecture for implementing MQ7 sensor. The suggested system reveals that the traffic light is modified using pollution observed value by using sensor. This work coordinates that traffic reenactment structure is to give dependent on continuous pollution detecting system. The outcome shows that decrease the pollution level with the traffic signal control and furthermore lessen the general gridlock in city. They effectively finished the proposed technique, and they can be ready to decrease the pollution level.

2.5 Dynamic Traffic Light Optimization and Control System using Model-Predictive Control Method

The authors proposed a novel Model Predictive Control based Traffic Light Control System. This technique incorporates gridlock level expectation model and enhancing traffic timing strategy. The stored traffic information will be utilized to anticipate forthcoming traffic volumes. An MPC-based traffic signal improvement technique is put forward to acquire settings that can reduce complete clog. It can quickly react to constant traffic conditions to decrease gridlock.

III. EXISTING METHODOLOGY

Traditional traffic signal method depends on fixed time idea designated to each side of the path which cannot be changed according to varying traffic condition. Intersection timings dispensed are settled, some occasions higher traffic

thickness at specific side of the path requests more green time when contrasted with standard allocated time. In this framework we cannot handle the traffic and vehicle taken in the metro urban communities and furthermore crisis vehicles endure here. So the crisis vehicles endures a ton to a great extent is probability of losing patients life.

IV. PROPOSED METHODOLOGY: REQUIREMENTS

The below given components are connected by connecting material and can be implemented.

Hardware requirements:

- Arduino UNO
- Power Supply Unit
- Oxygen Sensor
- Heart Rate Sensor
- Respiratory Sensor
- RFID Reader and Card
- UART
- GSM Modem
- Node MCU
- APR Voice Module
- LCD
- Speaker

Software requirements:

- Arduino IDE
- Embedded C
- Protues 7

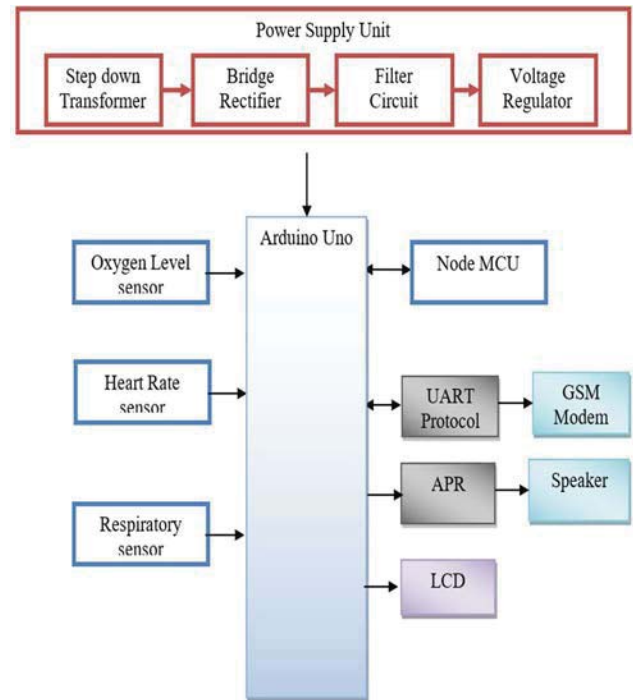


Figure:1

Arduino UNO

The Arduino Uno is an open-supply microcontroller board subject to the Microprocessor ATmega328P microcontroller and made by Arduino.c.c. The block is set with automated and basic information/yield sticks that can be combined to various augmentation sheets (shields) and various circuits. The board has 14 progressed Input output pins, 6 basic Input output sticks, and is programmable through an Arduino IDE (Coordinated Improvement Climate), through a sort of B USB connect. It will in general be powered through the USB connect or through an external 9-volt battery, anyway it recognizes voltages up to 7 and 20 volts. It is comparative with respect to the Arduino Nano and Leonardo.

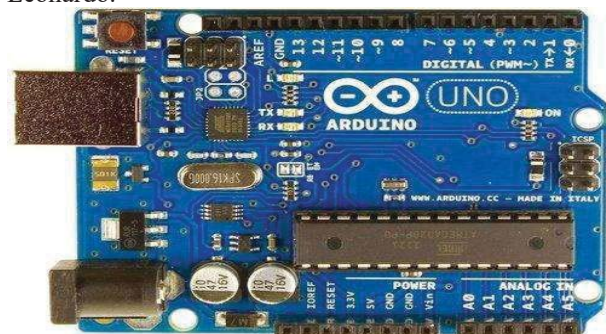


Figure:2

Power supply Unit :

A power Supply Unit is an inside IT equipment part. Notwithstanding titled as, Power Supply Units (PSU) don't contribute frameworks with power else changes it. Particularly, a force supply changes over the unnecessary high voltage (AC) current into direct current (DC), and, they manage the DC yield voltage to the fine resilience's needed for present day registering segments. Most force supplies are exchanged mode, it has execution favourable circumstances and makes planning for different voltage inputs simpler. This implies that many of the PSUs will work in various nations where the force info may change. In the UK, the voltage is 240V 50Hz in USA 120V 60Hz and in Australia it is 230V 50Hz.

Oxygen sensor :

Gasboard-7500H collection are a kind of oxygen gas sensors, which can realize correct and stable measurements

for oxygen concentration and flow rate. Gasboard-7500H collection offers a new, economical, durable choice for system designers who is searching for medical oxygen sensor for PSA oxygen generator, medical ventilator, respiratory device, anesthetic machine and vaporizer. By adopting ultrasonic detecting method and principle of TOF (time of flight) measurement, Gasboard-7500H collection have high performances: excellent stability, high accuracy, speed response, continuous monitoring, no drift, no need routine calibration, maintenance-free, etc.

Heart Rate Sensor :

An optical pulse sensor estimates beat waves, which varies in the volume of a vein that happen when the heart siphons blood. Heartbeat waves are recognized by estimating the adjustment in volume utilizing an optical sensor and green Drove. Receiving an optical channel improved for beat wave identification inside the sensor block lessens the consequences of encompassing light, for example, red and infrared beams. This licenses great heartbeat signs to be gained, even outside. What's more, utilizing optical sensor age developed longer than a year permitted ROHM to altogether expand the affectability of the sensor block. Backing for low splendour low VF LEDs makes it conceivable to arrive at a low force optical pulse observing framework without the requirement for outside circuitry. This adds to longer working cases in wearables with limited battery limit.

Respiratory sensor :

The respiratory sensor is a touchy bigness sensor worn the utilization of a simple fitting high toughness woven flexible band fixed with a length customizable webbing belt. It recognizes chest or stomach extension/compression and gives the breath waveform. The sensor is without latex, sans magnet, and sans Velcro, and might be worn over apparel. Since the breath sensor can be utilized with any examining rate, it tends to be associated with any contribution of any encoder. Usually, it is associated with a contribution with a lower inspecting rate.

RFID Reader and Card :

RFID - Radio Frequency Identification It is used in providing a unique identification for an object. RFID device must be scanned to retrieve the identifying information. RFID reader is placed in the controlling section and RFID tag is placed in the object that has to be tracked.

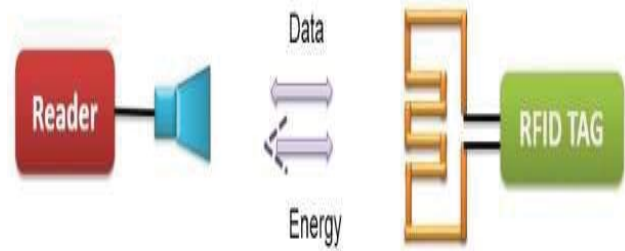


Figure:3

GSM Modem :

Europeans introduced Global System for Mobile Communications first named as Groupe Special Mobile. They peoples from European Telecommunications Standards Institute (ETSI) developed the standard for GSM. They introduced for describing the protocols for 2G network which is used by mobile phones .Later it became the default standard for global mobile communication, and they earned 90% market shares. It is operating among 219 countries and territories.

Node MCU :

IoT platform which is very lost cost is known as Node MCU. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Express if Systems, and hardware which was based on the ESP-12 module. Later, ESP32 32-bit MCU support was included.

APR voice module :

An APR9600 is a solitary chip voice recorder and playback gadget from Aplus integrated circuits. This chip utilized blaze non unstable memory to hide away to 256 voltage levels for example 32 to 60 seconds. This chip has numerous highlights like, one can choose test rates with ensuing quality and recording times, Microphone amplifier , automated gain control (AGC)circuit , expects hostile to associating channel, coordinated yield enhancer and measure the executives and so on.

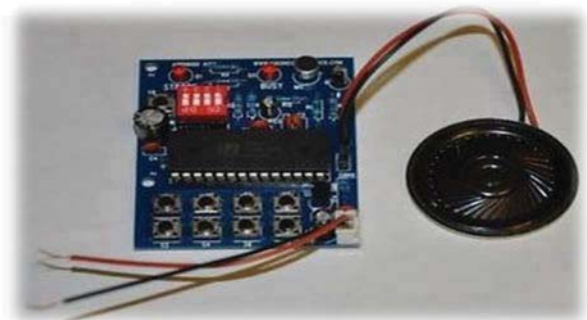


Figure:4

LCD :

The desired images will appear when the light passes through. One of the finest things behind lcd displays. LCD consume very low power as compared to LEDs and Cathode ray tubes. LCDs are very flat and thin.

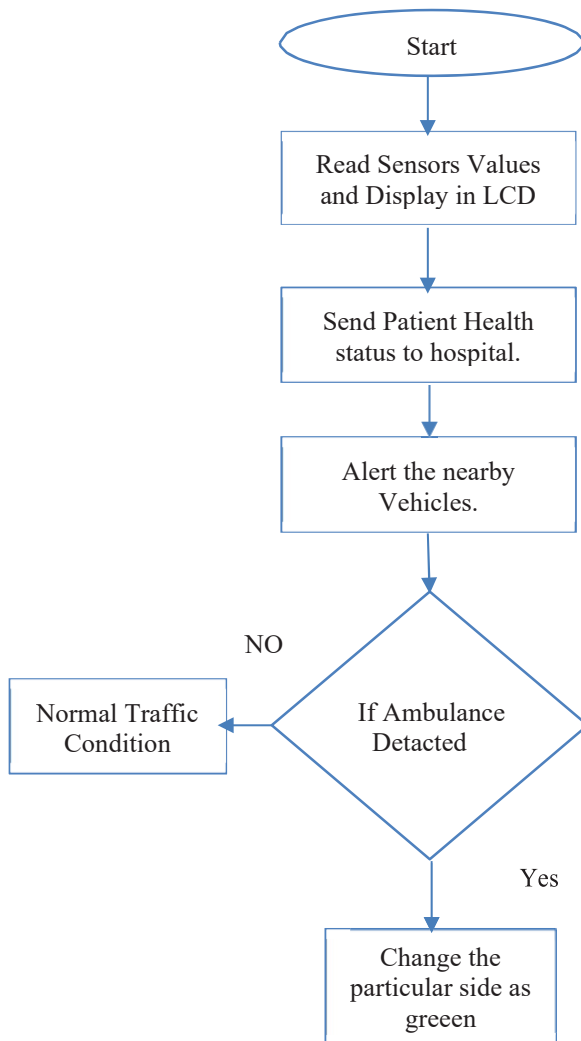


Figure:5

V.CONCLUSION

In this paper we presented the lane clearance system for ambulance during traffic congestion. We also proposed the heart rate sensor respiratory sensor and oxygen sensor to monitor the patient's health condition and the details will be send to the near by hospitals using "BLINK" app.

VI. RESULT

Our project helps patients to reach ambulance on time. We have placed RFID tag and reader in ambulance and traffic inter junction, respectively. In emergency condition this project helps good. For implementing algorithm, we have tested. Our project requires no manual resources. During critical condition it switches automatically to green on side and other sides as red. It also paves way for fire extinguisher, VIP vehicles and other emergency vehicles. At basic circumstances, this odea holds good.

VII. REFERENCES

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