

Smart Traffic Control System with Path Clearance Ability and Theft Vehicle Detection

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Abstract: The principal challenge in traffic control is to accommodate the traffic in safe and efficient way conventional system do not gives much preference to emergency vehicles such as ambulance, fire and safety vehicles... that's why majority of human lives are ended on traffic on the way to hospital. So in consideration to that we proposed this system. Path clearance for emergency vehicle is included here emergency vehicle driver as well as user have an application to give and get the notification respectively also there is a centralized server in between the min addition to this we included theft detection module. It is for the vehicle owner through hardware and a application.

Keywords: Traffic light, WIFI access point, RSSI, ESP32, DJANGO server.

I. INTRODUCTION

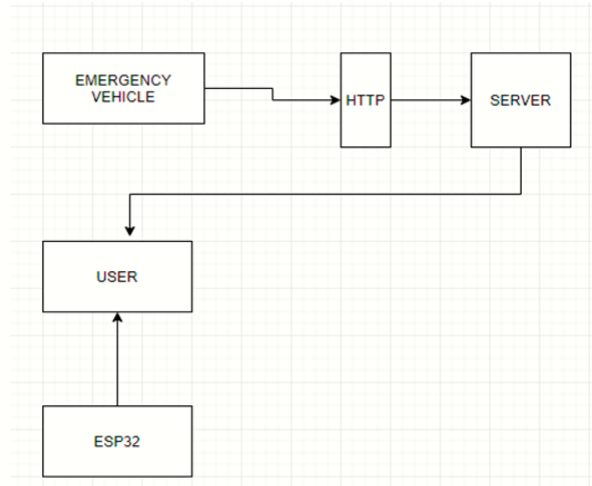
The project deals with a novel method for path clearance for emergency vehicles and also for vehicle theft detection. The work aims in designing an intelligent traffic controlling system. There is a great requirement to have well coordination of the traffic signals and also with the other vehicle on the way. so for the effective path clearance for emergency vehicle we are implemented in 3 modules. Emergency vehicle driver alert, traffic light control, user alert. This are done through the android application. And also the project deals with a novel method for vehicle tracking and providing an alert to the owner of the vehicle by communication through android application to get alert. Vehicle tracking and theft detection systems have brought the N component especially for the vehicle versions which are not included hotspot facility in vehicle and also for increment the network range .the signal strength when the user's WIFI is connected with the hotspot is helps to find out whether the vehicle is theft or not.

II. EXISTING SYSTEM

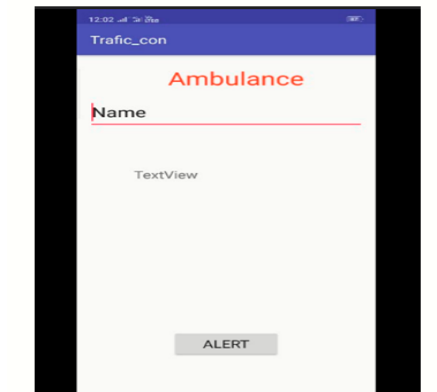
Existing system for traffic control is differ in different countries. Currently there are many intelligent traffic control systems are there using different technologies such as embedded system, RFID, PLC, fuzzy logic, image segmentation, scada, MEGA 328P microcontroller and Arduino software. These are already implemented in various countries and also its own advantages and disadvantages. Concepts using RFID arduino are successfully implemented in countries like UK&US. But in a developing country like India it is very difficult to implement because of the high population and also its high cost similarly in case of theft vehicle detection there are any options available in the vehicle itself like jaguar, audi, benz..most of the uses anti theft lockingsystem, 360° protection car radar GPS laser detector safety which are costly and also any of the factory cars are designed to turn off. so this is not a efficient method which are the main disadvantages of the existing system and we are proposing a system to overcome these cons.

III. PROPOSED SYSTEM

We are proposing a system with a little more features to the current one, by involving the emergency vehicle driver and other vehicle owners through an application to give and get notification regarding the arrival of emergency vehicle with the help of a centralized server. All system is connected to a centralized server. Centralized server will control traffic lights when the ambulance approach the traffic control. User also connected with centralized server. User got a notification to slowdown the vehicle. in case of theft detection we are creating a hardware setup to paced it as hidden in the vehicle and we are using the signal strength from the device to vehicle theft detection and find the vehicle. Here we are included 4 modules. Emergency vehicle alert, Traffic light control, User alert and theft detection.

IV. OVERALL SYSTEM DESIGN**V. EMERGENCYVEHICLE ALERTMESSAGE**

All system connected to centralized server. If ambulance came into traffic control ambulance driver will press a key and all data will be sent into centralized server including location. Admin controller in the centralized server will control the traffic signals. User got a notification to slow down or stop the vehicle. So path will be clear to ambulance like emergency vehicles.



Here is the sample design for the app page .the emergency vehicle driver should enter the id no of the vehicle in the name box and press alert button now the message from the emergency driver side is sent to centralized server including its location further actions taken from the centralized server.

VI. TRAFFIC LIGHT CONTROL

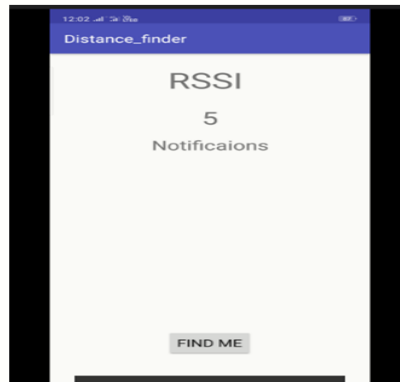
This takes place in the centralized server side. Admin controller in the centralized server is responsible to control the traffic signal.If the ambulance reaches the traffic signal then it shows green light. If it crossed the light then only traffic light will be changed into green.

USER ALERT

When ambulance driver reaches the traffic control he wants to notify the centralized server. The admin controller should control the traffic light also pass the information to users to slow down their vehicle. So this alert instruction to user from centralized server is included in this module.

THEFT DETECTION

Using RSSI technology. RSSI – Received signal strength identification. Based on RSSI info distance of vehicle from mobile can be obtained.so we can find the distance of vehicle from user. If a vehicle is theft it can be identified easily.



When we on the data and hotspot then we go to app and press find e button .then according to RSSI into the distance of vehicle from our mobile can be obtain. so we can find the distance to the theft vehicle .if the user is within 1 km of the vehicle then the phone WIFI starts vibrate when the vehicle starts moving. And this vibration is a warning to the vehicle owner about the theft for get this warning the user just have to on the data and hotspot(necessary) then go to the app and press find e button.

PROS

- Effective path clearance for emergency vehicles with the help of other vehicle users on the way.
- These apps can be used in any smartphones.
- Hardware components for theft detection is also of cheap rate.
- Hardware can be kept as hidden or not .
- Size of the hardware is comparably less.
- Esp32 increases the WIFI hotspot connection range warning mechanics gives enough tie to the user to take the precautions .

VII. CONCLUSION

The work aims in designing an intelligent traffic controlling system. There is a great requirement to have well coordination of the traffic signals. The proposed work is developed particularly when emergency vehicles are approaching towards the traffic junction.

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