

IOT BASED EMERGENCY AND THEFT VEHICLE IDENTIFICATION IN TRAFFIC SYSTEM USING RFID

Velmurugan.V¹, Arunkumar.B², Deepika B³, Dhanasree.M⁴, Kumaran.S⁵

Assistant professor, Dept.of ECE, Agni college of Technology , Chennai, Tamilnadu¹

UG Student, Dept.of ECE, Agni College of Technology, Chennai, Tamilnadu^{2,3,4,5}

Abstract: In today's world, traffic jams during rush hours is one of the major concerns. During rush hours, emergency vehicles like ambulances get stuck in jams. Due to this, these emergency vehicles are not able to reach their destinations in time, resulting into a loss of human lives. we have developed a system which is used to provide clearance to any emergency vehicle by turning all the red lights to green on the path of the emergency vehicle, hence providing a complete green wave to the desired vehicle. In addition to the green wave path, the system will track a stolen vehicle when it passes through a traffic light. So, it is an autonomous 2-tier system which will help in the identification of emergency vehicles or any other desired vehicle. It is a novel system which can be used to implement the concept of the green wave.

Keywords: Emergency vehicle, Theft vehicle , RFID, ultrasonic sensor, Embedded c

I.INTRODUCTION

India is the second most populous country and is most populous country in the World and is a fast growing economy. It is seeing terrible road congestion problems in its cities. Infrastructure growth is slow as compared to the growth in number of vehicles, due to space and cost constraints. Also, Indian traffic is non-lane based and chaotic. It needs a traffic control solutions, which are different from the developed Countries. Intelligent management of traffic flows can reduce the negative impact of congestion. In recent years, wireless networks are widely used in the road transport as they provide more cost effective options. Technologies like ZigBee, RFID and GSM can be used in traffic control to provide cost effective solutions. RFID is a wireless technology that uses radio frequency electro-magnetic energy to carry information between the RFID tag and RFID reader. Some RFID systems will only work within the range inches or centimeters, while others may work 100 meters (300 feet) or more. The use of embedded technology has been implemented in traffic light control, as per the traffic light control whenever ambulance reached to traffic road, it has to wait for the clearance of traffic and for clearing traffic it takes a several minutes. If the case patient will not get treatment in proper time to reduce this hazard. By making use of IoT scenario, it is possible to clear the traffic by sending message to the signal board hence ambulance can reach the hospital without delay in time .and without wasting time for the clearance of traffic load, By making use of Embedded and IoT we can develop a model to clear the traffic while ambulance coming in the path..Then we have prepared the detection of the theft vehicle with help of IOT and with embedded system.The IOT with the help of GPS will help to locate our vehicle and we can track the accurate location. The Internet of things (IoT) is the internetworking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings, and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as "the infrastructure of the information society." The IoT allows objects to be sensed and/or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human inavation

II.REVIEW OF LITERATURE

2.1 WeihaiChen, Zheng Zhao, Zhong Liu, Peter C.Y. Chen, 2019,IEEE “A Novel Assistive On-ramp Merging Control System for Dense Traffic Management”,.

On-ramps are area off requent traffic congestion. Proper traffic guidance around on-ramp merging areas exerts a positive effect on the relief of traffic congestion. The objective of this paper is to design an assistive ramp-merging control (ARMCON) system. It utilizes knowledge about professional driver behavior and the dynamical relationship among the on-ramp vehicles, to produce timely information so as to guide the on-ramp drivers when merging with the main traffic flow. Under the guidance of ARMCON, disruption of the main traffic on the express way is minimized while a certain merging rate is maintained.

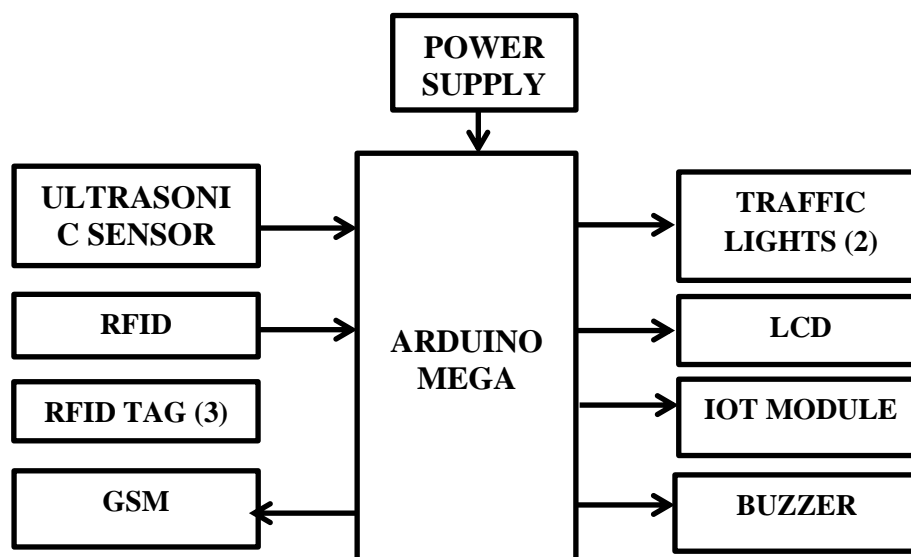
2.2 Samya Muhuri , Debasree Das, Susanta Chakraborty,2017,IEEE, “An Automated Game Theoretic Approach for Cooperative Road Traffic Management in Disaster”

Transportation system gets paralyzed when a place affected by any catastrophic natural disaster. Some roads get blocked and vehicle density increases in all the other remaining routes. Each vehicle stuck at different position of the road network and tries to reach its destination in minimum time. A cooperative game theory based approach is proposed to regulate road traffic and minimize the waiting time of individual vehicles in any disaster situation .Each vehicle acts as a player and tries to increase its pay off value. Pay off value is based on the different parameters of the vehicle like its arrival time, velocity, priority and traffic density. Pay off value is adjusted according to the existing vehicle density in the road segment. Traffic density of each road is minimized simultaneously which increases the flow of the vehicles in the network cooperatively. Waiting time of a vehicle is directly proportional to the number of adjacent edges of the corresponding node and its density. The method also shows that any vehicle with higher priority will cross the road in minimum time. New alternative road creation process is also proposed based on graph theory or the worst situation. The alternative path will join the affected road with a minimum utilized node in the network to evacuate the affected traffic. Experimental results suggest that our proposed method achieve minimum average waiting time compare to the existing method. The shortest time travel path is found for each vehicle from its source to the desired destination in post disaster situation.

III.PROBLEM STATEMENT AND PRELIMNERIES

In our system, we have used ARDUINO MEGA microcontroller which acts as brain of our system. Hence entire system program is stored in it. Ultrasonic sensor is placed away from the traffic junction each line of the road so that continuously monitors the distance to the traffic lights, if that distance reduced so that we came to know that vehicle congestion take place. Based on which traffic line congests traffic light glows green signal to it. In which the traffic signal management for emergency vehicle is include. To make the proposed system to work, each and every vehicle going for registration is provided with an RFID tag. In which information like vehicle’s unique registration number and vehicle type is stored. The vehicle type is mentioned as e (for emergency) and n (for normal) in the tag. These data are stored in the database in the transport office. To read the information in tag an RFID reader is installed in the traffic control unit. Whenever the vehicle passed through the signal reader get the vehicle type and gives it to the controller unit. In which if any e (emergency) type vehicle is found, that lane is made green w.r.to the other lanes. To upgrade further more theft vehicle detection method is used. To find a theft vehicle, the user has to contact the transport office to update the database of the vehicle with t (for theft). So, whenever a vehicle is passing through the traffic signal, buzzer gives alarm signal also send information about the vehicle to the owner using device call GSM and the control unit picks up the tag details and sent to the transport office via IOT unit.. Thus, the police able to intercept the vehicle in the next possible path.

3.1 BLOCK DIAGRAM OF THE PROPOSED SYSTEM



IV. RESULT OF THE STUDY:

The result of the system to the proposed system and the design is shown below.

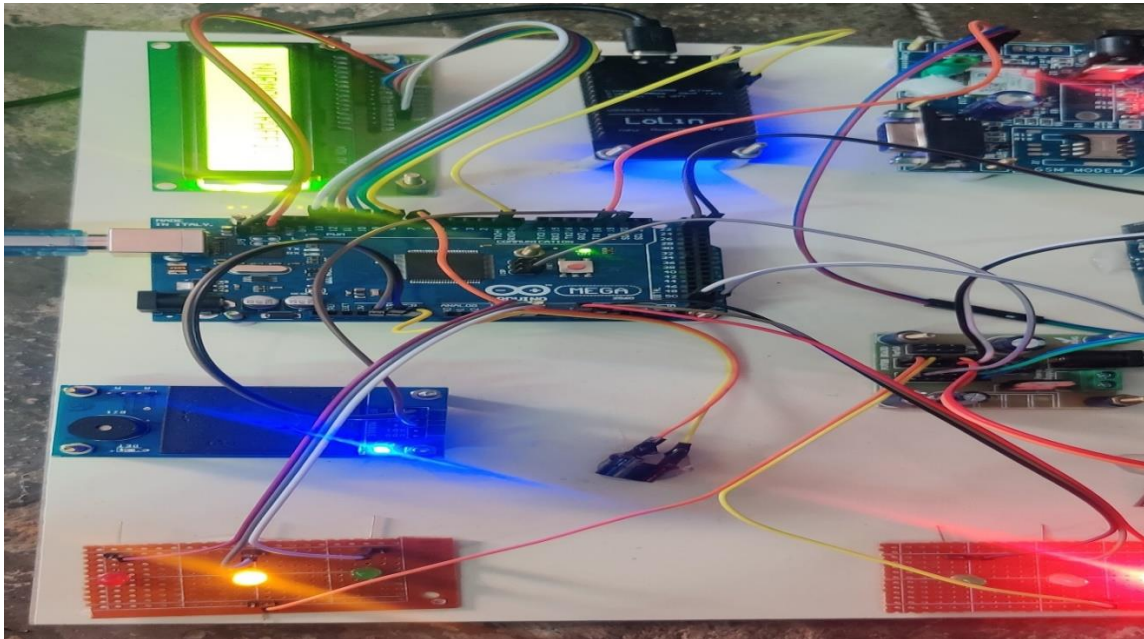


Fig 4.1 **HARDWARE SETUP**

4.2 RESULT FOR EMERGENCY VEHICLE

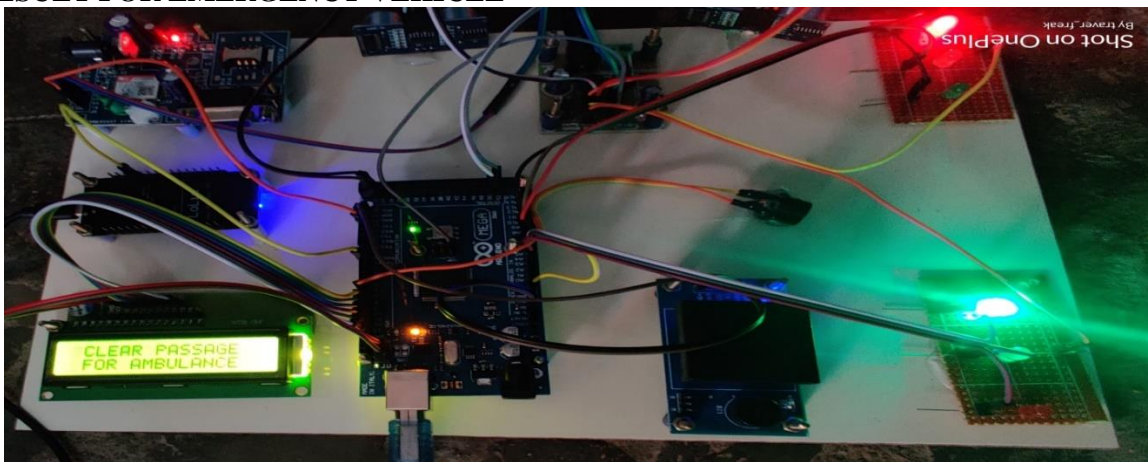


Fig 4.2 **OUTPUT FOR EMERGENCY VEHICLE**

4.3 RESULT FOR THEFT VEHICLE

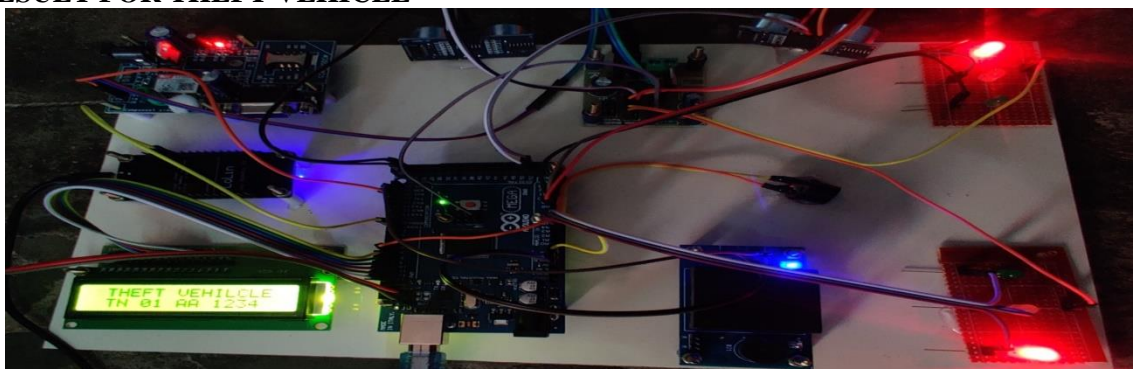


Fig 4.3 **OUTPUT FOR THEFT VEHICLE**



CONCLUSION:

As the entire system is automated it requires very less human intervention. Emergency vehicles like ambulance, fire trucks, need to reach their destinations at the earliest. If they spend a lot of time in traffic jams, precious lives of many people may be in danger. With emergency vehicle clearance, the traffic signal turns to green as long as the emergency vehicle is waiting in the traffic junction. The signal turns to red, only after the emergency vehicle passes through. In other part the stolen vehicle will predict the location by the GPS placed inside the vehicle with the help of IOT to see our location in web server. By the use of RFID tags we can get the message to our smart phones by the use of GSM we can easily reach the vehicles.

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