International Conference on Innovative Research in Engineering, Management and Sciences
International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2019 IJSRCSEIT | Volume 4 | Issue 9 | ISSN : 2456-3307

Automatic Reportage of Accident Zone to the Emergency Vehicles Using Smart Route Framework

SUGANYA R*1

*1 New Horizon College of Engineering, Bangalore
suganyadurga@gmail.com1

ABSTRACT

With this mechanical and open impact, the utilization of vehicles has immediately expanded and in the meantime the frequencies of accidents have similarly widened. It's not possible for anyone to dismiss the accidents, yet can save their life by pushing the ambulances to the specialist's facilities in time. In this paper accidents revelation and course of emergency vehicle using IoT is arranged. The objective of this set up is to confine the deferral caused for development of crisis vehicles. This way to deal with boot intends to offer the accident spot to crisis vehicle using GPS that is open in salvage vehicle

Keywords : IoT, Accident,Emergency Vehicles.

I. INTRODUCTION

Presently a days, on the planet the populace is expanding step by step as the populace builds the quantities of vehicles on the streets and roadways additionally increments. Because of this, the event of the accidents and congested driving conditions likewise be expanded. This module gives the data about accident to the rescue vehicle and clinic. Subsequently, this unexpected assistance will spare the open life and diminishes the roads turned parking lots. To upgrade the degree of supervision and organization for burden transport vehicles, especially trucks which are conveying coal it is crucial to make transport vehicles remote watching module. The cloud will be ceaselessly sitting tight for the data from the framework which should record position of the vehicle. The cloud contains the data about speed and position of the vehicle.

The smart traffic light controller that was acquainted with recoveries the holding up time and maintains a strategic distance from the traffic load. In nowadays the Wireless Sensor Networks (WSN) will be connected in various territories like human services checking, climate observing, home computerization, military, wellbeing and security, etc. Worldwide situating framework (GPS) is utilized by the satellite-based route, which is utilized to get and send the sign and it will serve the customer with required information. The cloud will send the accurate area and position of the vehicle to emergency vehicle through the mail. With the assistance of GPS and cloud vehicle is followed. The RF Transmitter and RF Receiver is used for crisis vehicle rescue close signal.

II. LITERATURE SURVEY

Abid et al. [2] depicts that there were 33,000 causalities in 2009 and due to engine vehicle crashes there are 2.2 million exceptional injuries in the United States. These accidents influence the overall

population financially and procure a yearly measure cost of $230 billion dollars. Every single individual burned through $750 dollars in USA. What's more, the roadway blockage will cost $78 billion yearly.

Olaru and Eltoweissy et.al. [7] Portrays a creative and ground-breaking thought of including Mobile Ad-hoc Networks (MANET) for street and roadway correspondences using front line imaginative movements known as Vehicle Ad-hoc Networks (VANET). The VANET uses a blend of Vehicle-to-Infrastructure (V2I) and Vehicle-to-Vehicle (V2V) interchanges, for driver notice ahead of time of traffic occasions. In V2V structures, each vehicle is accountable for prompting the closeness of an event in light of reports from various vehicles. This framework will provoke all around dealt with security ambushes by checking incorrectly enlistments, which convey more noteworthy plausibility and a more blockage likelihood of serious dangers.

Abid et al. [2] depicts that there were 33,000 causalities in 2009 and in view of engine vehicle crashes there are 2.2 million one of a kind injuries in the United States. These accidents influence the overall population financially and gain a yearly measure cost of $230 billion dollars. Every single individual burned through $750 dollars in USA. Also, the roadway blockage will cost $78 billion yearly.

Olaru and Eltoweissy et.al. [7] Portrays a creative and amazing idea of including Mobile Ad-hoc Networks (MANET) for street and roadway correspondences using cutting edge inventive movements known as Vehicle Ad-hoc Networks (VANET). The VANET uses a blend of Vehicle-to-Infrastructure (V2I) and Vehicle-to-Vehicle (V2V) interchanges, for driver notice ahead of time of traffic occasions. In V2V systems, each vehicle is accountable for instigating the closeness of an event in light of reports from various vehicles. This framework will provoke all around dealt with security strikes by checking incorrectly enlistments, which convey more noteworthy plausibility and a more blockage likelihood of serious perils.

Haisong Chen et al. [8] depicts about a accident discovery utilizing GPS, GSM and ARM. The vehicle state is transmitted and gotten by this proposed framework and different necessities of the client upon the event of the accident to the medical clinic. The framework focuses to accomplish the location of crash in the principal go through, and obtain treatment time for the impact hurt, therefore cutting down the accident mortality, moreover reducing scenes influencing time on the action.

Prashanath Mohan et al. [6] presented a framework which a performs rich identifying by piggy support on cutting edge cell phones that customers pass on with them. The recognizing section uses the GSM radio, GPS, receiver, and additionally accelerometer sensors to distinguish knocks, potholes, sounding and braking. The paper in like manner tends to a couple of troubles, for instance, limitation in the vitality effective manner, discretionary direction and sound discovery.

Sangita N Gujar et al. acquainted a prepared organization framework with screen speed of a vehicle and perceive accident using GPS recipient. Through this proposed microcontroller model, it screens pace of a vehicle, contrasts and the past speed reliably and acknowledge occasion of impact if vehicle rate is underneath the predefined speed. Accident territory is acquired from GPS close by time and in this way advantageous assistance to significant human life can be given. Xu Li et al. [4] MSN for Activity Observing has two sorts of calculations: 1) Linked based, and 2) Vehicle based. In connected based framework calculation, the pair of sensors are utilized in the connection one toward the starting stage and other toward the consummation organize which is the best traffic status reflect of that interface. In inverse the vehicle-based calculations use each available data pair for the thought of the considerable number of associations

set out by them to process a typical speed of traffic. Thusly, the sensors coordinated to a vehicle it can move crosswise over numerous connections and relating more streets. The result amassed can be exact yet having sensors in all of the vehicles moreover on all of the lanes is costly especially when we are contemplating a financially poor country like India.

Faisal Ate al. [9] presented a traffic control model, considering the remote sensor framework and a forewarning framework for the red-light convergence circumstance to alert drivers on various sides to save their lives. This framework relies upon the line length of the vehicles on the action lights. This model additionally speaks to the 4 reenactment models of various pieces of world are utilizes this model. The total outcomes are appeared as vehicles which are not served just because.

Harpal Singh et al. [5] communicates that, the traffic organization is the fundamental issue of the road. Traffic lights expect an indispensable part in rush hour gridlock the board. Current traffic lights take after the destined gathering. Foreordained arrangement traffic lights are known as static traffic lights. The traffic lights in the street are not gifted to count the amount of vehicles and the need of the vehicles on intersection point. In like manner, regardless of whether none of the vehicles are there in the inverse these vehicles should hold up in rush hour gridlock signal intersection. A portion of the vehicles like Fire Brigade and Emergency vehicle are also stuck in the rush hour gridlock signal and should burn through their valuable time.

YogitaJadhav et al. depicts in his find out about the vehicle limitation framework utilizing GSM and GPS administrations. The framework licenses control of the vehicle and transmits the status and position of the vehicle to the owner on his cell phone as a (SMS) short message at his requesting. This composing makes them inadequacy as researcher in certain spots where there is no obtainment of GSM frameworks it is irksome for correspondence moreover did not say increasingly required information of the moved vehicle security structure with theft control and crash notice and its quality thievery control through GSM short message advantage and sends region as longitude and scope.

Zhang Wen et al has showed up in their examination about the vehicle position, the owner sends a sales through SMS. SMS is sent through the GSM model from the gadget which is incorporated by Spartan processor. The processor sends request to a GPS in the device. The GPS module responds with bearings of the vehicle position. This position (scope and longitude) is sent to the customer as a SMS to the customer with time, date, longitude and scope positions. TANG shuming et al. recommended that CCTV and GPS based accident wraps GSM module to send the scope and longitude of the impact happened spot. The estimation of scope and longitude to the customer could possibly fathomed GPS data yet which comes about no use.

Hu Rufua et al. proposed "radio recurrence" based framework in which accidents can be identified which is kept to a particular locale exactly where if it is distant then it is unreasonable to distinguish the vehicle. Rajesh Kannan Megalingam et al.proposed a accident location framework utilizing video based which is apparently intricate.

Md. Syedul Amin et al. creator suggested a speed based computation which seems to have false alert at whatever point an abrupt brake is associated. Along these lines there is essential to develop a framework with exceptionally less false caution and region deciding framework so anyone can see easily where the vehicle is found.

C.Vidya Lakshmi et al.proposed the deceleration/speeding up, edge of the hit and move over are recognized by MEMS sensor. For the emergency vehicle salvage the gsm model utilized with a RF transmitter in rescue vehicle and RF

beneficiary in sign unit. P. Arunmozhi1et al. For GSM module the sign is significant on the off chance that there is no sign, at that point the GSM module won't work appropriately. This suggests there could be no passage to correspondence, which makes GSMmodules not absolutely strong. Taking everything into account, the Dijkstra's Algorithm was acquainted by various papers with make rescue organizations accomplish the impact spot.

III. PROPOSED DESIGN

The engineering comprises of four noteworthy units which go about as the spine for framework to be specific Vehicle module, emergency vehicle module, cloud database, and traffic control frameworks. The square chart of accident location and insightful route framework for crisis vehicle is as shown in fig 2.1.

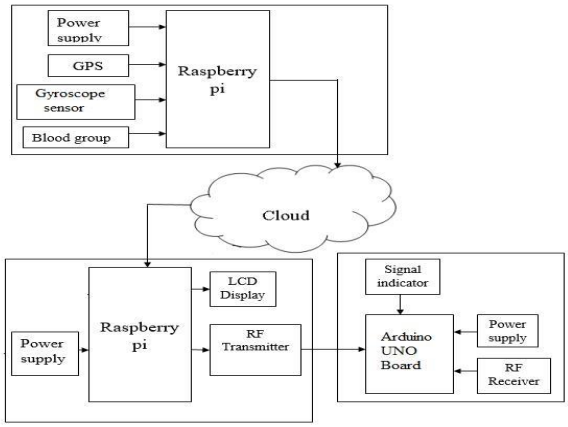

Fig 2.1: Square outline for accident recognition and wise route framework for crisis vehicle

1.Vehicle Module: This framework has gyroscope sensor alongside GPS module which are coordinated in vehicle. At whatever point accident happens GPS follows the present position (scope and longitude). The scope and longitude of the accident spot is sent to cloud which illuminates about the accident to the rescue vehicle and the medical clinic through mail.

2.Ambulance Module: Emergency vehicles are furnished with LCD display and RF transmitter. Cloud sends the scope and longitude to the raspberry pi through the mail. The control sign is transmitted by the control area to the majority of the sign between the emergency vehicle and the vehicles by the RF transmission.

3. Cloud Database: The distributed storage stores all the data about the blood groups and their contact list. This stockpiling assumes a focal job in the crisis reaction and it is utilized to impart between the vehicle unit and emergency vehicle unit through mail.

4. Traffic Control Systems: The RF collector will get the information from RF transmitter in emergency vehicle nearing the traffic signal. It Controls the traffic signal naturally with the assistance of RF module. At whatever point the crisis vehicle arrives at near the traffic signal (generally 100m), the traffic sign will be made of green by means of RF correspondence. So the emergency vehicle is prescribed to achieve the medical clinic immediately.

5. Traffic Violence identification framework: A framework will be coordinated on the streets with the Infrared proximity sensors which is utilized to sensor an inappropriate passage of the vehicle in One-manner streets. This framework is manufactured utilizing ultrasonic sensor,Micro-controller,Buzzer and LCD.The framework will be incorporated with the four IR closeness sensor with id ,when the vehicles move right way then the sensors will be on in the example of 1,2,3,4 i.e.., the primary sensor will on pursued by the second then third and finally fourth ,yet on the off chance that the vehicle moves in misguided course, at that point the sensors get activated in the style 4,3,2,1. In this way a misguided course section of vehicle will be detected and the traffic station will be cautioned.

IV. PROPOSED ALGORITHM

Created Algorithm is

Step 1: Establish a precise association.

Step 2: Initialize the GPS module.
Step 3: Wait for the danger conditions.
Step 4: If the crash happens then get to the GPS collector.
Step 5: Send the accessed to GPS data to cloud.
Step 6: Cloud sends the data to emergency vehicle and medical clinic through mail.
Step 7: In emergency vehicle instate the LCD.
Step 8: Blood group, latitude and longitude are displayed on the LCD.
Step 9: RF transmitter will begin sending the information.
Step 10: If RF recipient gets the information the red light abandons red light to green light.
Step 11: If RF beneficiary does not get the information it will wait for the information from the RF transmitter.
Step 12: The gathered GPS data from the cloud is additionally sent to medical clinic through the mail.
Step 13: emergency clinic individuals send the message to the separate individuals through cloud.

V. EXPERIMENTAL RESULTS

The robotic car model is as shown in the figure 4.1. The mechanical vehicle model comprises of a raspberry pi board, dc engine and engine driver L293D. L293D engine driver will serves to dc engine for the development of the robot.

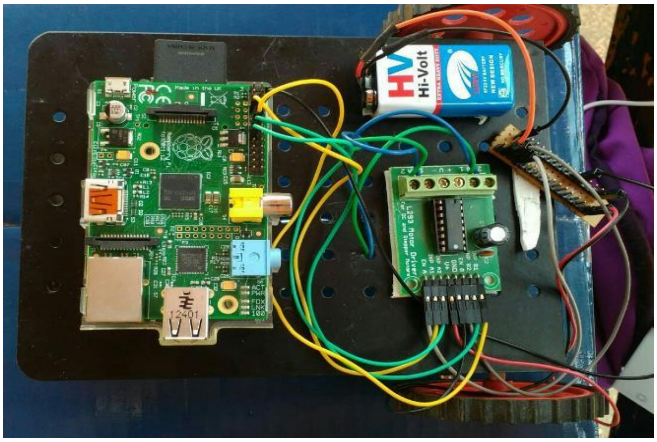

Fig 4.1: Robotic car model

The vehicle unit is coordinated with raspberry pi board, accelerometer sensor and GPS. The accelerometer sensor identifies the accident by thinking about the situation of the vehicle. The scope and longitude are found by utilizing the GPS. At the point when the estimation of the accelerometer sensor changes over 45 degrees the scope and longitude worth is will be sent to emergency vehicle unit and medical clinic through mail.

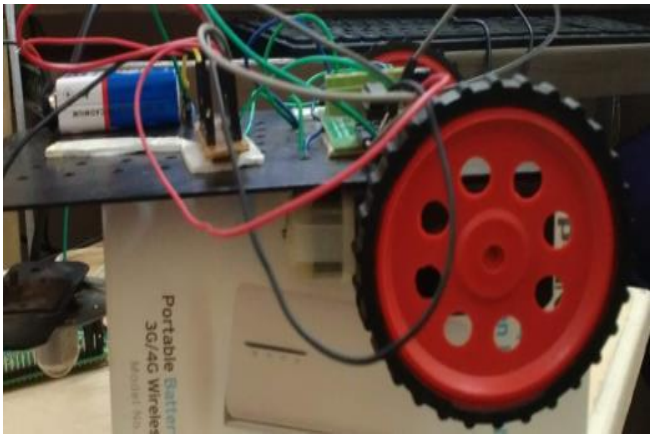
Fig 4.2: Vehicle unit

When the driver begins the vehicle, the individuals in the vehicle ought to enter their blood group. On any chance that any accident happened out at the vehicle,then the position, scope and the longitude of crash happened spot sent to the rescue vehicle and medical clinic through mail. Figure 4.3 demonstrates the showcase to enter the blood gathering. The B+ is the entered blood bunch which has been shown in the work area. The scope and longitude of the crash happened spot is 13.067757 and 77.5045808.

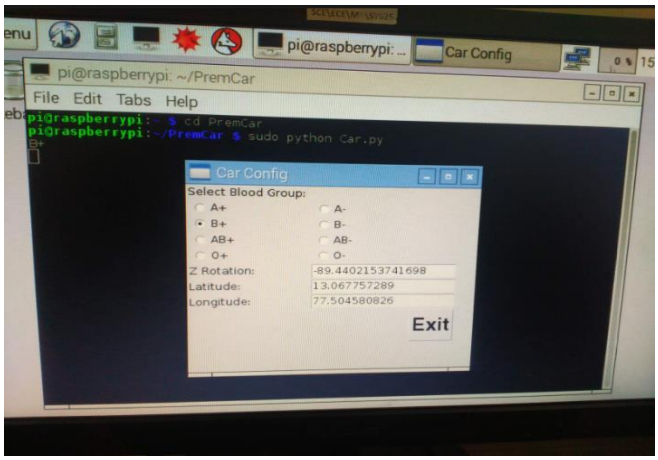

Fig 4.3: People in car entering the blood group

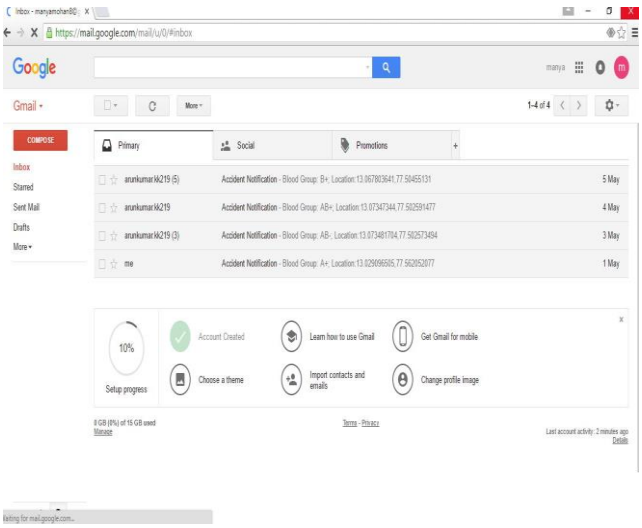

Fig:4.4 Mail sent to ambulance

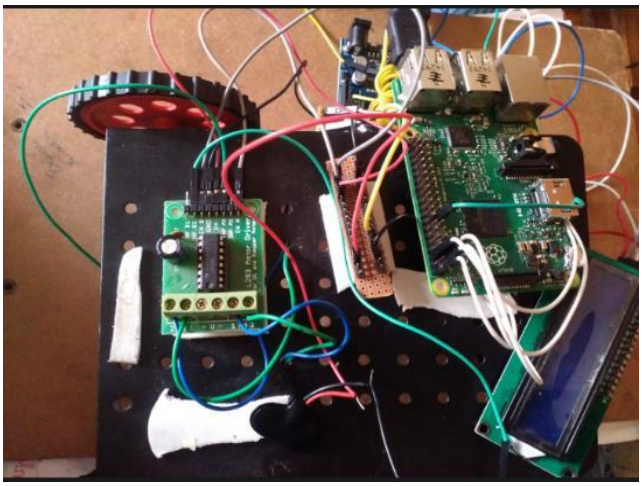

Fig 4.5: Ambulance unit

Figure 4.5 demonstrates the emergency vehicle unit which is incorporated with a raspberry pi board, LCD display, dc engine, L293D engine driver and RF transmitter. At whatever point accident happens mail sent to the emergency vehicle unit with blood gathering and scope and longitude of the crash happened spot. RF transmitter will transmit information sequentially to clear the traffic.

Fig 4.6: Blood group, latitude and longitude displayed on LCD

Figure 4.6 demonstrates the blood group, scope and longitude showed on LCD in a rescue vehicle unit. The blood group of the individual is B+ and the accident spot's latitude is 13.067 and longitude is 77.504.

VI. CONCLUSION

The usage and plan of this model is for traffic the board, so the emergency vehicle on street will get a reasonable method to arrive at medical clinic in least time and immediately from human and vehicle interference. There is a correspondence between the GPS and the cloud which is the fundamental element of this model. This framework utilizes the SaaS and IaaS highlights of the distributed computing alongside the accident recognition. The incorporation between the cloud, vehicle, crisis vehicle and medical clinic are the web and that between cloud mail administration and client.

FUTURE SCOPE

Future extension is to keep up a vital good ways from the vehicle theft by using GPS and cloud. Consistent data logging and assessment will be executed that allows the system to screen development conditions in various territories. Diverse prosperity notification can be issued to the owner of auto if auto crosses certain described speed limits. The nonstop alerts can in like manner be set for the unapproved vehicle improvements and diverse uncommon cases using a movement of geographic zones alongside time sensitive guidelines for the vehicle in/out.

VII. REFERENCES

[1] Olariu S, Eltoweissy M and Younis M, Towards autonomous vehicular clouds, ICST Transactions on Mobile Communications and Applications, vol.11, 2011, pp 1-11.

[2] Abid H, Phuong LTT, Wang J, Lee S and Qaisar S, V-Cloud: Vehicular cyber-physical systems and cloud computing, In Proceedings of the 4th International Symposium on Applied Sciences in Biomedical and

Communication Technologies, Barcelona, Spain: ACM:2011, pp 1-5.

[3] Aijaz A, Bo chow B, Doter F, Festal A, Gerlach M, Kroh R, et al. Attacks on inter vehicle communication systems-an analysis, 2006.

[4] Xu Li, Wei Shu, Minglu Li, Hong-Yu Huang, Pei-En Luo and Min-You Wu, Performance evaluation of vehicle-based mobile sensor networks for traffic monitoring, IEEE Transactions on Vehicular Technology, vol. 58, no. 4, May 2009, pp. 1647-1653.

[5] HarpalSingh, KrishanKumar and Harbans Kaur, Intelligent traffic lights based on RFID, International Journal of Computing & Business Research, ISSN 2229-6166.

[6] Prashanth Mohan, Venkata N., Ramachandran Ramjee and Nericell: Rich monitoring of road and traffic conditions using mobile smartphones, at SenSys, Nov 2008 pp 323-336.

[7] Olariu S, Eltoweissy M and Younis M, Towards autonomous vehicular clouds, ICST Transactions on Mobile Communications and Applications, vol.11,2011, pp 1-11.

[8] Haisong Chen and Xiuqing Han, Design of the scene of the accident alarm system based on ARM and GPS, International Conference on Electric Information and Control Engineering (ICEICE), 2011, pp 3679 – 3682.

[9] Faisal A. Al- Nasser and HosamRowaihy, Simulation of dynamic traffic control system based on wireless sensor network, IEEE Symposium on Computers & Informatics 2011, pp 40-45.

[10] Gongjun Yan, S. Olariu and M. Weigle, Providing location security in vehicular Ad Hoc networks, IEEE Wireless Communications, vol.16 n.6, Dec 2009, pp 48-55.