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Accident Detection and Elegant Rescue System using Android-Real Time Location Tracking

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Abstract*: *The measure of accidents happening in India are developing a tiny bit at a time. Crisis reaction time is inconceivably major, when it fuses occasions, for example, vehicle episodes. Most of the human lives are being lost thinking about road troubles. Quantifiable Analysis shows that in the event that we rot only 1-minute in mishap reaction time that can develop odds of sparing a person's life up to 6percent. Among all the occurrence cases, some can be constrained by taking certain preventive measures and some can be spared by giving a concise data to the misfortune's family. This work region work helps the misfortunes by giving some concise ramifications to their particular relatives furthermore perceives the guideline driver of the mishap. That is, either the disaster is intoxicated or fire setback has occurred, and so on. In like manner the proposed framework gives the constant zone following.

Keywords*: *Emergency victim, Emergency responder, Sensors, Tracking real-time location.

I. I.INTRODUCTION

The pace of occasion of setbacks in India has been growing immediately, when meandered from the latest unmistakable confirmation. India positions first in street misfortune passing's over the world, as revealed by the world street estimations, 2019. The age pack 25-30 was the most powerless towards death by street mishaps. Fig.1 gives the comparison of injuries and fatal deaths occurred in the years 2018 and 2019.

Accident Rate	Major injuries	Fatalities
JAN-JULY 2018	7,526	5,559
JAN-JULY 2019	6,522	2,979

Fig. 1. Comparison of Road Accidents in 2018 and 2019

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So as to diminish the event of mishaps, we need to guarantee the vehicle area GPS beacon in business vehicles and driving test systems at RTOs. Likewise, amendment of back spots in parkways and fixing crash boundaries ought to be finished. There are 17 individuals who bite the dust each hour because of the street mishaps out of which 4 individuals pass on consistently in light of not wearing head protectors. There exist numerous frameworks which can recognize the area of the mishap, yet the fundamental drawback of those frameworks is that they couldn't distinguish the main driver of the mishap. Consequently, mishaps happen more than once because of similar missteps done by people. This work area work in like manner reduces the fire incidents by forewarning the people whenever they get the opportunity of escaping.

II. PROPOSED SYSTEM

The principle thought behind this exploration work is to structure and execute a mechanized framework that utilizes a PDA to identify vehicle mishaps. And afterward to report it to the closest accessible responders in order to decrease the causalities however much as could be expected. Likewise, this framework assists with diminishing fatalities by diminishing the reaction time of crisis administrations like Fire Brigade, Police Department and Medical crisis administrations. Arduino assumes a fundamental job in the plan of framework. As the work done here is primarily implanted based, which utilizes both equipment and programming with a particular application, Arduino is for the most part favored as it is the reasonable segment. It is the most significant device to identify the mishaps and ready individuals during the crisis conditions [6]. GSM is used to follow the live domain of the individual being suggested. By utilizing GSM, the locale followed by the GPS can be sent to the relative's gainful [13]. Here, SIM800L GSM is utilized.

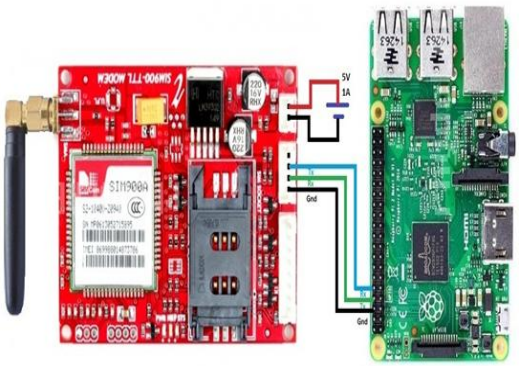

Fig.2 GSM Module

III. METHODOLOGY

In this proposed ask about work, MEMS is also used close by GPS and GSM, which finds the circumstance of the vehicle and besides when it is in the unpredictable position the sensor remembers it as a disaster. It is set near the breeze shield of the vehicle. The fire Sensor responds at whatever point fire incident will happen and gives a sign sound [8]. Alcohol Sensor is used to see the driver whether the driver is put or not [12]. It is put close to the driving seat. By utilizing this sensor inebriated individuals are not permitted to drive the vehicle. With the objective that basic customer and drive cases and simultaneously, events considering inebriated people can be kept up a key ordinary ways from. LCD is used to show the estimations of the sensors. These have different sizes and different shapes with 16 pins. Ringer gives an alarm sound at whatever point any of the sensor gets evident [10].Vibrational Sensor is used to see the vibrations when any fiasco is occurred. Fig.3 shows the square arrangement used for the proposed work.

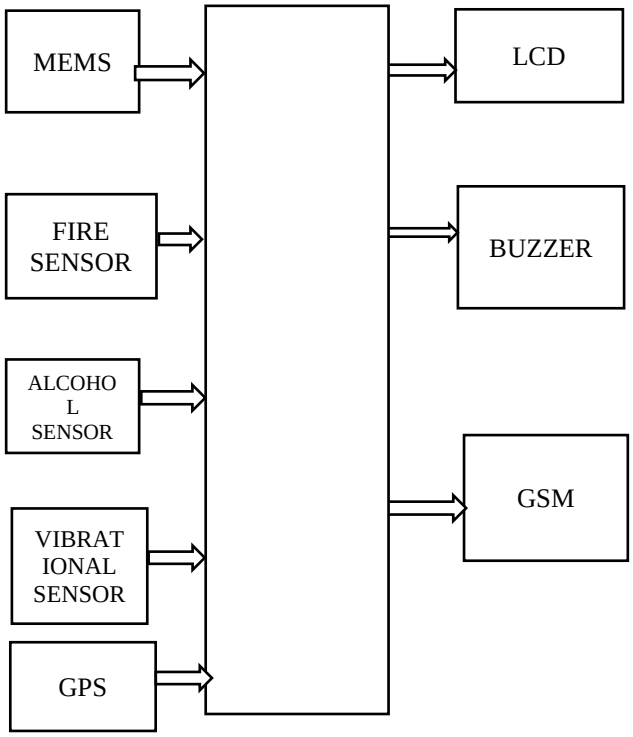

Fig.3: Block Diagram

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The Arduino Uno is planned with the target that it grants to be reset by programming running on a related PC. One of the hardware stream control lines (DTR) of theATmega8U2/16U2 is associated with the reset line of the ATmega328 through a 100 nano Farad capacitor. Decisively when this line is enunciated (taken low), the reset line drops adequately long to reset the chip. The Arduino programming utilizes this cutoff and licenses the client to move code by on a key level beating the trade button the Arduino condition This closes the bootloader can have a shorter break, as the bringing down of DTR can be a colossal proportion of separated through with the start of the exchange. This structure other than has various outcomes. Totally when the Uno is related with either a PC running Mac OS X or Linux, it resets each time a connection is made to it from programming by strategies for USB. Bootloader will run in uno. While it is changed by disregard squashed information (for example some uncommon option from a trade of new code), it will deter the major scarcely any bytes of information sent to the board after an affiliation is opened. In case a sketch running on the heap up gets one-time procedure or other data when it first beginnings, it guarantees that the thing with which it offers holds tight for a second in the wake of opening the interest and before sending this data. The Uno incorporates an etching that can be sliced to hurt the auto-reset. The pads on either side of the etching can be welded together to reconnect it. It's wandered "RESET-EN". We can hurt the auto-reset by interfacing a 110-ohm resistor from 5V to the reset line.

MEMS accelerometers is the most regularly utilized capacitive sort. The capable MEMS accelerometer is famous for its lofty affectability and its precision during lofty temperatures. The contraption doesn't change respects relying on the materials utilized and relies just on the capable attributes that occur taking into account the modification in parcel between the plates. In case two plates are held relating to each other and are detached by a partition 'd', and if 'E' is the permittivity of the separating material, by then capacitance conveyed can be made as

$$C_0 = E_0.E\ A/d = E_A/d$$

$$E_A = E_0EA$$

A – Area of the electrodes

The alteration in the estimations of E, An or d will help in finding the adjustment in capacitance and as such accomplices in the working of the MEMS transducer. Accelerometer regards generally depend upon the separation in estimations of d or A. It can in like manner be known as a sensible one-turn accelerometer. In the event that more game-plans of capacitors are kept in 90 degrees to one another we can structure 2 or 3-pivot accelerometer. A brief MEMS transducer for the most part contains a versatile microstructure or a proof mass that is related with a mechanical suspension structure and on to a reference plan.

Global Positioning System (GPS) is a module which doesn't require any outside sections excepting the power deftly. It is presently inbuilt with inside fortification battery. The GPS gives the degree and longitude region of the mishap misfortune to send the messages to relatives and caution them.

On giving a tick on the affiliation sent in the message the area of the misfortune can be perceived [7]. GPS is ceaselessly settled on the GPS satellite's position which is an advancing position. Fig.4 shows that how GPS module is used.

Fig.4: GPS Module

Specifications of GPS:

- Power Supply: 3.3V, 45 mA.
- Antenna used : High gain GPS patch antenna
- Maximum Number of satellites trace
- Size: 26mm x 26mm x 11.7mmi

Small scale electro-mechanical Systems (MEMS) Technology is one of the most example setting improvements that have been applied really happening as intended of the majority of the moved gadgets like video projectors, bi-assessment chips what's more minor impact airbag sensors. Because of front line advancement, arranging multi-chips was applied on to make a solitary chip MEMS with unmatched and exactness. Galactic observatories, media trades working environments and research office measures are set to explicit time signals or controlled to correct frequencies by explicit clarification GPS beneficiaries. For all intents and purposes indistinguishable satellite course structures combine the Russian GLONASS, the top tier European Galileo masterminding framework, the proposed COMPASS course plan of China, and IRNSS of India. GPS gives a particular time reference here.

IV. SIMULATION ANALYSIS

Proteus is a software used for the simulation analysis. Tools in this Proteus are very easy to use. All kinds of components are present in this software. So, the designing of the circuit becomes easy and program is dumped onto the circuit designed. Proteus programming assumes a crucial job for the structuring of the circuit. Each and every hardware component like diodes, resistors, IC's etc., can be used in the design of circuit based on requirement of the user.

V. RESULTS AND DISCUSSIONS

After complete execution using Proteus software, the output will be displayed in the LCD as shown in Fig.3. If there is an occurrence of fire accident, immediately the fire sensor indicates through the buzzer sound. Also if the driver is drunken the system immediately warns and it conveys through the alcohol sensor.

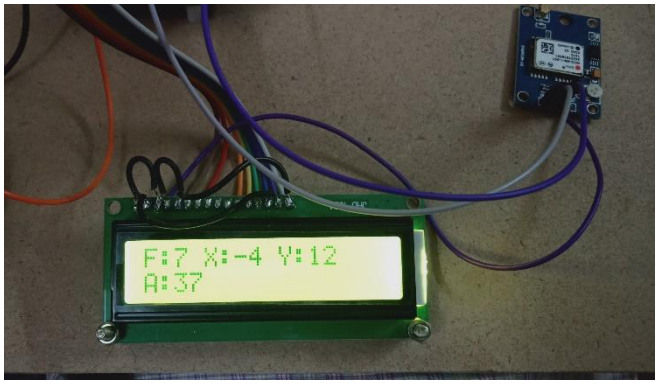

Fig.5: Output Displayed on LCD

F represents fire sensor value
A represents alcohol sensor value
X, Y denotes the position of vehicle

VI. CONCLUSION

This proposed research work is not only used to prevent the accidents but it also identifies the reason behind for the taking place of accident. The location traced by the GPS is sent to the family member's mobile by using GSM. The only limitation of this system is that when 'N' number of phone numbers are given and more sensors respond at the same time, then each phone number receives different messages according to the priority. This may be avoided by using slight modifications.

FUTURE SCOPE

In future, this research work can be further improved by using the system which also gives the preventive action of fire accidents and various ways to save the accident victims on highway roads, which should be very easy and understandable such that it can be used even by the uneducated people by which we can save the maximum number of human lives.

REFERENCES

1. "Smart home system using android application", by RA Ramlee, MA Othman, MH Leong, MM Ismail, SSS Ranjit in the International Conference of Information and communication technology (ICOICT**).**
2. "Findings on real-time location tracking by implementing different mechanisms", by A. Sai Hanuman, Kanegonda Ravi Chythanya, International Journal of Innovative Technology and Exploring Engineering (IJITEE).
3. "Real-time Vehicle Tracking System", by S. Ahmed et al, MS thesis (Dept. Elect. And Electron Eng.), BRAC Univ., Dhaka, Bangladesh, 2015.
4. "Introduction to GPS: The Global positioning system", by Boston, A. El-Rabbany (USA, Artech House) in 2002.
5. "Road Crash Statistics". Asirt.org. (n.d.).
6. "Accident detection and Alert system", by T. Kalyani, S. Monika, B. Naresh, Mahendra Vucha, International Journal of Innovative Technology and Exploring Engineering (IJITEE).
7. "Automatic Accident Detection and ambulance rescue with intelligent traffic light system", by Mr. S. Iyyappan, Mr. V. Nandagopal IAREEIE (International journal of Advanced research in Electrical, Electronics and Instrumentation Engineering).

8. "Accident detection and smart rescue system using Android Smartphone with real-time location tracking", by Arsalan Khan, Farzan Bibi, Muhammad Dilshad, Salman Ahmed, Zia Ullah, Haider Ali, in International Journal of Advanced Computer Science and Applications (IJACSA).
9. "Vehicle Monitoring and Tracking System using GPS and GSM Technologies", by S. Thanveer, Guntha Vamshi Krishna, Syed Mohisin Akram,B. Hari Kumar, Syeda Fathima Tehseen.
10. "Detection of fire accidents using GSM and GPS technologies", by N. Bharath, G. Harika, A. Sai Susmitha, L. N. Adithya teja, K.V. V. Kumar in ISER (International Journal of Scientific& Engineering Research).
11. "Wireless System for Vehicle Accident Detection and Reporting using Accelerometer and GPS", by Shailesh Bhavthankar, H. G. Sayyed in ISER (International Journal of Science and Engineering Research).
12. "Real-time Alcohol Detection and Accident prevention System for Four Wheelers", by Kowsalya Devi, Joys Shanthini B, Aparna Murali, Arthi M, in IJETA (International Journal of Engineering Trends and Applications).
13. "Automatic Vehicle Accident Detection and Messaging System Using GPS and GSM Module", by Jayati Routh, Arshiya das, Piyashi Kundu, Madhubarsha Thakur, (International Journal of Engineering Trends and Technology).

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Suneetha Emmela, employed as Assistant Professor (Department of Electronics and Communication Engineering) in Bapatla Women's Engineering College, Bapatla, Andhra Pradesh. Received her M.Tech degree from Nagarjuna University in the year 2012. Area of interest to do research in Communications and Signal Processing.

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