An IoT Approach to Vehicle Accident Detection

Chandini U[1], Vidheesha GVS[2]

[1]Professor, Department Computer Science and Engineering, Atria Institute of Technology, Bangalore, India
[2]Student, Department Computer Science and Engineering, Atria Institute of Technology, Bangalore, India

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ABSTRACT - *In created countries like India with advance transportation, innovation must assist with contacting individual in most limited time to spare lives. Facilities care for certain patients and elderly people who, as a result of flexibility issues, are at risk for falls, and may require quick response in the event of a disaster. In this venture we are utilizing Internet of Things (IOT). IOT is a rapidly creating development to offer data correspondence using simplicity and imperativeness profitable used in the vehicle. Internet of Things (IoT) businesses reshaped the manner in which individuals impart and brought a change in perspective to open and private administrations. This paper passes on a brilliant and dependable IoT framework answer for in a flash informing the Open Wellbeing Association at whatever point a mishap happens and pinpoints its geographic facilitates on the guide.*

Key Words: **Accident, collision avoidance, Public safety organization, accident, rescue, IoT, sensor, geographical coordinates.**

1. INTRODUCTION

As per the Relationship for Safe Global Street Travel (ASIRT), about 1.3 million individuals kick the bucket in street crashes every year, 20-50 million are harmed or incapacitated. Except if move is made, street traffic wounds are anticipated to turn into the fifth driving reason for death by 2030.As far as many injured could lose their lives, and since no on-site medical assistance has been provided promptly as a result of late accident reporting, victim cannot brake the car immediately as he will be panicked, brakes fail to work. The current existing solutions require mobiles, that the injured must launch the app and request help manually and that would not be possible if he/she is under critical or serious non-vital situation. The situation becomes even worse if passengers went under unconscious state. The other existing solution is manually reaching the hospital but understaffed offices, mishaps may not be promptly seen, subsequently deferring treatment, conceivably with serious results. The main focus to detect accidents and immediately alert surroundings, hospitals, families to prevent mishap.

2. EXISTING SYSTEM

The existing framework works by sending message to PSO headquarter at whatever point a mishap happens and pinpoints its geographic facilitates on the guide. At the point when a mishap happens, a stunning sensor distinguishes it. At that point, a calculation is connected to process the sensor flag and send the geographic area alongside some auxiliary data to the PSO headquarter, demonstrating mishap event.

The accident is controlled by using collision avoidance and braking and steering control using cloud computing and open GPS and a GSM module. The whole process is done by using IOT and cloud computing, so the number of accidents is controlled using this system.

3. PROPOSED SYSTEM

Proposed system works by monitoring the condition of the car during travelling. The components used in proposed system are hall effect sensor which records vehicle speed, GPS and GSM module for communication and tracking vehicle location, and vibration sensor and buzzer signaling device. When accident takes place the hall effect sensor will record the vehicle speed and send to the micro controller, parallelly with the help of vibration sensor the vibration of vehicle is detected depending upon the impact factor. If the impact factor is less than the set value, vibration sensor would not send signal to micro controller, if its more than the set value, vibration sensor will send the signals to micro controller. After crossing the set value of vibration sensor then the buzzer beeps to give an audible warning that accident occurred. GPS tracks the position of vehicle, using GSM (Global system for mobile communication) module it alerts people by SMS or call. The victims can be rescued either by people hearing the buzzer, or by GPS and GSM module. This is a promising framework expected to help in the repetitive safeguarding process by revealing in merely seconds the area of a mishap, the travelers harmed, blood classifications, consequently bringing down death's rates.

The overall model includes the following components:

3.1 Arduino

This is the core unit of the entire system as it controls the flow of information between sensors.

It is fundamentally an advancement board which gives the adaptability of composing C programs for the sensors and later they can be conveyed in the blaze memory of Arduino to check the working of sensors.

3.2 Vibration Sensor

This sensor can perceive vibrations in a given territory. It has two qualities as low and high. For the most part, it stays low for the situations where vibration sway isn't excessively incredible. It accomplishes high worth on getting high vibrations from nature, to quantify the adjustment in the volume of blood. It monitors the individual's pulse.

3.3 Global Positioning System (GPS)

A Global Positioning System is a beneficiary which gives position, speed and timing data of an article. On establishment of this sensor, any gadget can be followed to find its position.

3.4 Global System for Mobile Communication (GSM)

It is a part which is utilized for versatile to portable correspondence. It is answerable for sending SMS to the ideal number or making a call at whatever point trained.

3.5 Central Server

When a mishap is distinguished, the focal server is promptly educated about it. It is answerable for finding close by ambulances that can arrive at the mishap area

3.6 Alarm and switches

A buzzer or beeper is a signaling device; it gives an audible warning when an accident occurs. If it is a false alarm or if the driver feels that he does not need immediate help, there is a switch in the system that he can use to stop the working of the alarm.
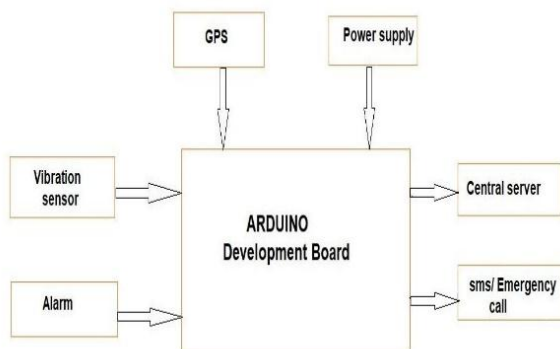

Fig 1. Arduino Development Board

4. CONCLUSION

The main idea of this paper is to notify the concerned authorities about an accident only if the passengers are injured. The proposed framework is intended to solve the same by incorporating more features in the already existing work done by the authors. With the addition of above discussed functionalities, this system can resolve most of the accident scenarios by detecting accidents on time and triggering immediate Alarm sensor which is advantage to alert people immediately and geographical locations helps to find out stolen vehicles. In future, it can be also be implemented in van's, trucks, and in bus.

5. FUTURE SCOPE

IOT accident detection system deals with the detection of accidents and preventing mishap. Surroundings are alerted when alarm beeps which helps to provide medication to the victim at the accident spots. GPS tracker in system detects the accident location and also helps in case vehicle theft/stolen. By increasing the technology, we can also avoid accidents by providing alerts system that can stop opposite vehicle to overcome the accidents.

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