

Life Saving System Using IoT Technology

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Abstract:

As we know, India is 2nd biggest country in population and Day by day population is also increasing very vastly with respect to that number of vehicles are also increasing and automatically accidents are increasing. In these accidents majorly students are involving. So to reduce these all problems we are introducing our IoT project LIFE-SAVING SYSTEM. Here the point is we can't stop this increasing population or we can't stop accidents but we can save the human life who met an accident, Our project main intention is also that only. There are many ideas for this problem like automatic SMS to hospital but we are going change that idea slightly. Here we are sending SMS that accident location to their parents or neighbors, with an addition to that if the driver took alcohol then also it will send an SMS to their parents and to neighbors using sensors. This idea or project is easy to implement and powerful.

Keywords: Accident; Alcohol; Parents; Sensors; SMS;

1. Introduction

In our present society, all need is smart work which includes simplicity and maximum output. Optimization is important. Our project will reach that because this consists of 2 sensors, Bluetooth simple Arduino and MIT APP. In present society, 90% of human almost consist smart phones. We are using that to do our project. Sensors and Bluetooth are connected to Arduino, via Bluetooth Smartphone is connected to this system. There are two parts in coding, one is in Arduino and another is at MIT APP.

2. Literature Survey

Mr.S. Iyappanand et al... they have created accident alert system Automatic Accident Detection and Ambulance Rescue with Intelligent Traffic Light System The main aim of the paper is to update the data of the vehicle to cloud and to monitor the vehicle continuously by the third party user or vehicle owner. This will helpful at vehicle identification point. For example, if an accident occurs they will take the data send these through a cloud and it will alert ambulance which is nearby the accident and it will use the traffic light system to overcome traffic jams while the ambulance taking the patient. This project uses microcontroller and GSM module to send GPS location to nearby hospital and police stations.[1]

Asmita Hjathin et al... they have mainly focused on Accident Avoidance and Detection. The main aim of the paper is to update the data of the vehicle to cloud and to monitor the vehicle continuously by the third party user or vehicle owner. This will helpful at vehicle identification point. For example, an accident has occurred somewhere else they will know through the chipset they have placed in the car, we will be knowing only the location of the accident and we can send the alert to a nearby police station. This system is not uploading the data to cloud and using a system to send the GPS location to near police station.[2]

Ms Krishna Priya et al... IoT Based Vehicle Tracking System and Accident Detection is the name of the project. The main aim of the paper is to send the accident spot location to nearby hospitals and police stations using GSM technology. And GPRS Accident detection is done through different sensors (Accelerometer and Ultrasonic sensor). So that we can use immediate medical attention nearby hospitals to reduce the percentage of the dead through accidents because of not getting immediate medical attention Integration errors must be minimized so the calculated displacement is very close to the actual displacement.[3]

Rahul Gautam, et al... Cloud-Based Automatic Accident Detection and Vehicle Management. The main aim of the paper is to update the data of the vehicle to cloud and to monitor the vehicle continually by the third party user or vehicle owner. This will helpful for vehicle identification point. We will be using internet by updating GPS location of accident spot to cloud. This system will not send any GPS location nearby hospitals or police stations.[4]

Aiswarya set al... The IoT Based Accident Prevention & Tracking System for Night Drivers. The main aim of the paper is to prevent the night time accidents because of drowsiness. Here IR sensor will monitor the blinking of our eyes. The

system will activate if a driver is sleepy and an alarm will ring. For example, while we are driving at night time after working long day while we are driving we can feel drowsiness this system will detect drowsiness and will ring an alarm so that you can drive home safely. This system will not send any GPS location nearby hospitals or police stations. This system will not detect if any accidents occur and there will be no alert for nearby hospitals or police station.[5]

3. Summarization

With the advance of technology and science in nowadays, we can reduce the rate of the dead in accidents by using our technology. There will be accidents because of drowsiness we can reduce these problems by using sensors to check if the driver is sleeping or not and we can ring an alarm so that he will be awake. Or we can use accelerometer sensors to detect if there any accident occurs and by using GPS location we can send information to nearby hospitals or police station using internet through cloud technology. And by locating an accurate site of accident we can reduce time to search the accident location by doing these we will get immediate attention to the accident location. Although the message was sent where immediate help was not necessary we can switch off the system manually.

4. Proposed System

All sensors and Bluetooth are connected to Arduino, after initialization of all sensors; Bluetooth is connected to a smart phone where MIT application is installed. The logic always checks initially MQ3 sensor, whether a driver is drunk or not .if drunken, the vehicle will not start and a message will be sent to their parents. If a driver is under limit then it will check the accelerometer readings if those readings cross the limit then it indicate accident happens now we will understand in the form of an algorithm

Algorithm

1. MQ3 Value Under Limit or Not (Yes/No)
 - 1.1 Vehicle will not start and message sends to parents.
 - 1.2 Stop
2. Accelerometer Values Under Limit or Not (Yes/No)
 - 2.1 Accident happened and a message will send to their parents.
 - 2.2 Stop
3. The system will continuously check the sensors.

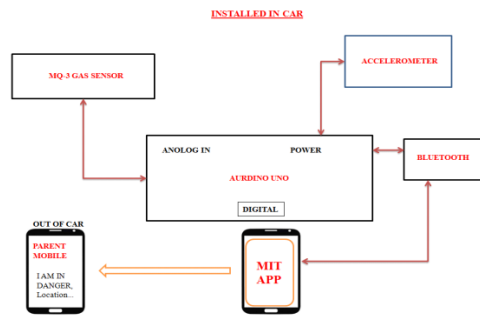


Fig.1. Architecture

5. Flow Chart

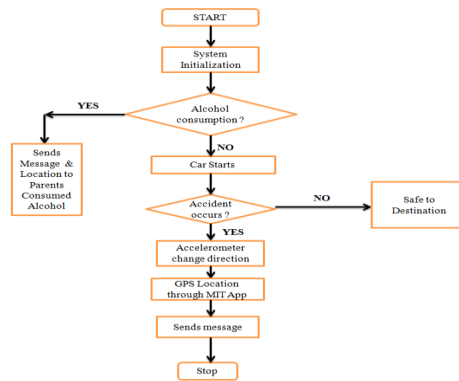


Fig.2. Flow diagram

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If mq3_value>500
Then Vehicles (AP37AZ1788) Driver is Drunken
If xValue < 250 || xValue > 400 || yValue < 270 || yValue > 400 || zValue < 380
Vehicle is Not Safe
else
Vehicle is safe
    
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6. Methodology

This project consists of two modules

1. Interfacing sensors, Bluetooth.
2. The connecting setup with MIT APP.

Interfacing Sensors, Bluetooth

Arduino consists of 6 analog pins, 14 digital pins, 3 Vcc and 3 GNDs. First, we will discuss accelerometer. It consists of total 5 pins in that three pins are designed to get values of X, Y, Z three dimensional directions. And other two pins are designed for Vcc and GND. This X, Y, Z direction pins are connected to Arduino analog pins A1, A2, A3 remaining Vcc and GND are connected to Arduino which gives power to the accelerometer to work in simple words. Now coming to MQ3 sensor it consists of 4 pins in that one pin is designed to detect the alcohol content of a person in a vehicle which is connected to Arduino analog pin A0. Vcc and GND are connected to Arduino which gives power to the MQ3 sensor.

Bluetooth

Next, to Bluetooth, it consists of 4 pins are designed to Transmitter (TX), Receiver (RX), +5V and GND. Among them, TX and RX of Bluetooth are connected to TX and RX of Arduino board respectively. Power supply and ground are connected to Bluetooth with arduino.

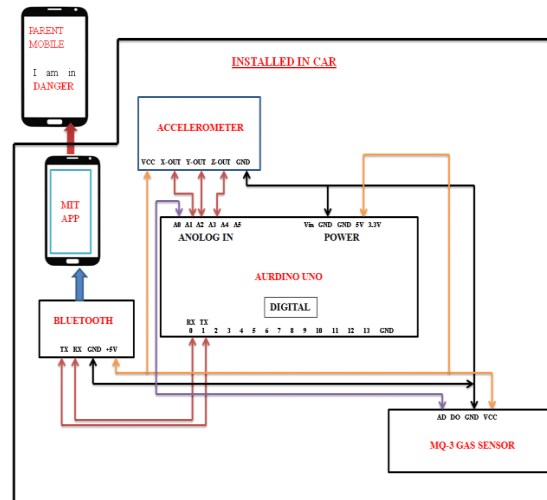


Fig.3. Design.

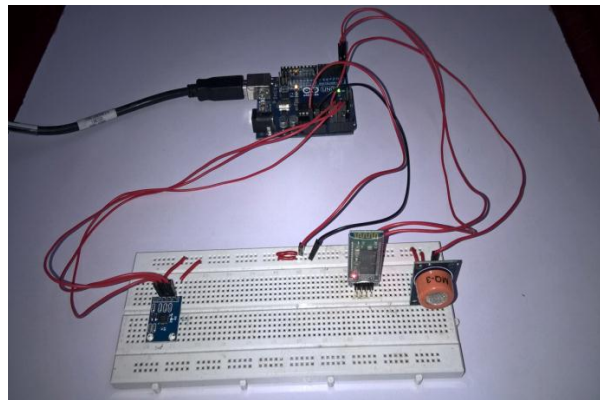


Fig.4. Hardware design.

In order to work with this it also includes coding in Arduino software, we coded and dumped into Arduino board in the way as mentioned in figures.

The connection of MIT:

Initially, our smart phone should be installed with MIT application.

In MIT APP inventor we should code. But that is drag and drop methods. The code in MIT checks for the Strings "DRUNKEN" or "NOT SAFE". DRUNKEN indicates driver took alcohol so the code will send Vehicle Number and Location to parents or guardians. If code strikes NOT SAFE string then it points that people who are in a vehicle are in danger and immediately app will take location from maps and sends to the parent or guardian number which is coded in MIT app.

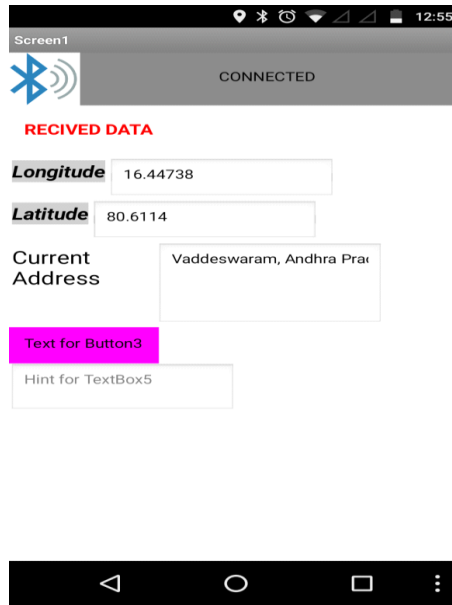


Fig.5. MIT APP in mobile.

7. Results

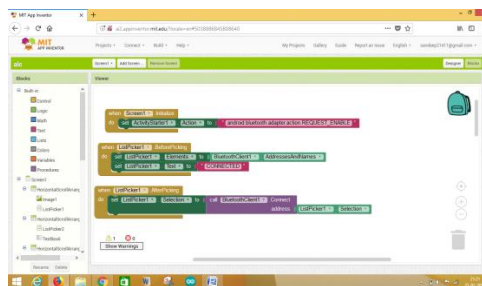


Fig.6. Code Block Part 1 in MIT APP INVENTOR

The above figure shows you mobile Bluetooth is connected to MIT APP to share the information from Arduino Bluetooth to MIT APP which is installed in mobile.

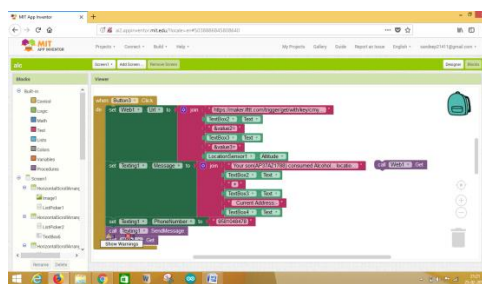


Fig.7. Code Block Part 2 in MIT APP INVENTOR

The above figure shows you the initialization when driver consumes alcohol it sends a message.

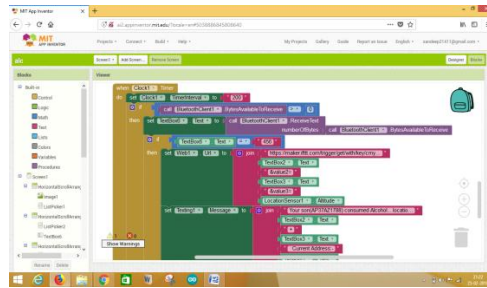


Fig.8. Code Block Part 3 in MIT APP INVENTOR

The above figure shows you the condition of sending a message to parent mobile that ‘Your son(AP37AZ1788) consumed alcohol... Location:- ...’ when 456 is sent from Arduino to MIT APP using Bluetooth.

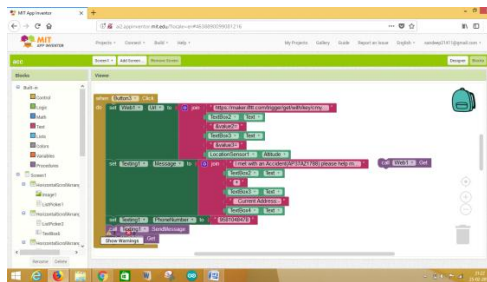


Fig.9. Code Block Part 5 in MIT APP INVENTOR

The above figure shows you the initialization when driver met with an accident. It sends a message.

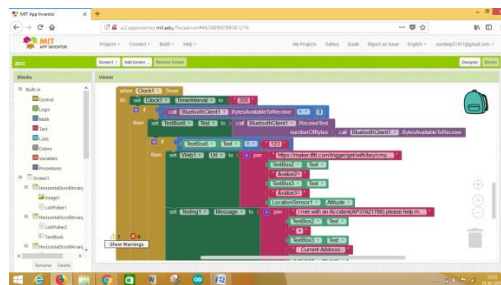


Fig.10. Code Block Part 6 in MIT APP INVENTOR

The above figure shows you the condition of sending a message to parent mobile that ‘I met with an Accident(AP37AZ1788) please help me... Location:- ...’ when 123 is sent from Arduino to MIT APP using Bluetooth.

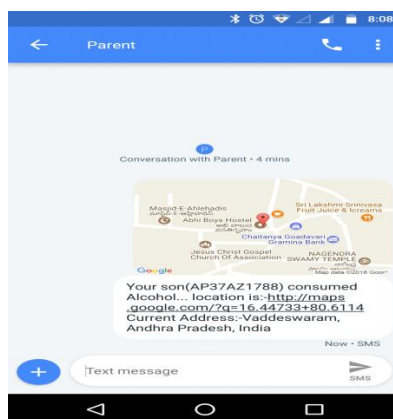


Fig.11. SMS sent from car to parent when alcohol consumed.

The above image shows driver(son) consumed alcohol it is detected by the MQ3 sensor which is installed in a car. So a message is sent to parent mobile from son’s mobile.

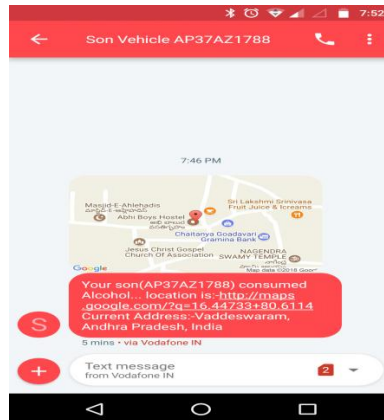


Fig.12. SMS received from son vehicle to parent when alcohol consumed.

The above image shows driver(son) consumed alcohol it is detected by the MQ3 sensor which is installed in a car. So a message is received to parent mobile from son's mobile.

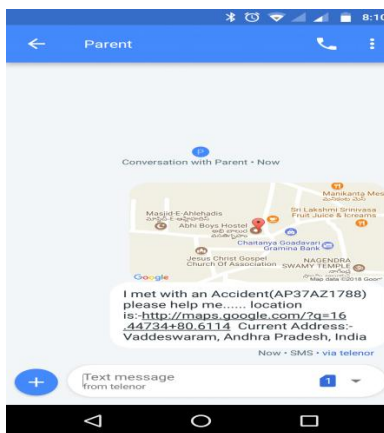


Fig.13. SMS sent from car to parent when accident occurred.

The above image shows driver (son) met with an accident. It is detected by accelerometer sensor when it is changed direction message is sent to parent mobile from son's mobile(car) using MIT APP.

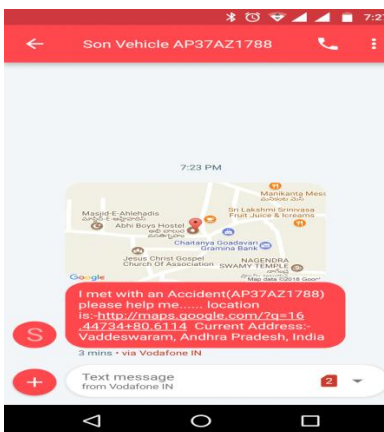


Fig.14. SMS received from son vehicle to parent when accident occurred.

The above image shows driver(son) met with an accident so a message is received to parent mobile from son's mobile.

8. Conclusion

Therefore we have completed the project. In this project, we performed the operations using Accelerometer, MQ-3 sensor, Arduino, MIT app, Bluetooth, Android mobile. To reduce the accidents due to drunken drivers we come up with the solution. Our system will not start the vehicle if the driver is drunk. If an accident occurs to a vehicle it is detected by the accelerometer. By using our module we will send a message "I am in DANGER" to default number. This system will work very well in reducing the accidents because of drunken drivers.

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