"IOT Based Vehicle Accident Detection System."

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ABSTRACT

Nowadays we are able to track vehicles using many applications which help in securing personal vehicles, public vehicles, feet units and others. Furthermore there is a rapid increase in the occurrence of the Road accident. This project is about a system which is developed to automatically detect an accident and alert the nearest hospitals and medical services about it. This system can also locate the place of the accident so that the medical services can be directed immediately towards it.

The goal of this paper is to build up a Vehicle accidental monitoring system using MEMS, GPS and GSM Technology. The system comprises of accelerometer, MCU, GPS GSM Module support in sending message. The accelerometer is used to detect fall and Threshold Algorithm are used to detect accident. Short Message will contain GPS [Latitude, Longitude] which helps in locating the vehicles.

Keyword: *ATmega328p, MPU6050, GPS, GSM, MQ5 etc.*

1. Introduction:

Nowadays we are able to track vehicles using many applications which help in securing personal vehicles, public vehicles, feet units and others. Rapid Increase in Road Accident.This Project is about a system which is developed to automatically detect an accident and alert the nearest Hospitals or medical services.The aim of this Project is to build up vehicle accidently monitoring system using GPS[Latitude and Longitude]which helps in locating the vehicle and GSM Technology.In this project we describes about IoT BASED VEHICLE ACCIDENT DETECTION AND TRACKING SYSTEM USING GPS TECHNOLOGY". We are using Raspberry pi in our project. When the system is switched on, LED will be ON indicating that power is supplied to the circuit. The vibration sensors that we are using in our project sense the obstacle, and then it sends interrupt to Raspberry Pi. The GPS receives the location of the vehicle that met with an accident and gives the information back. This information will be sent to a mobile number through a WhatsApp message.

2.Literature Survey :

In previous system we have seen as literature review, the one in which they have used ultrasonic sensor, Vibration sensor for accident detection which is not feasible because it could detect accident when vehicle is in traffic or get closer it can detect accident in this condition.Now, we are designing an accident detection system are going to use MPU6050 Sensor which is more feasible then Ultrasonic and vibration Sensor.

3. System Architecture:

The ATmega328p is an open source electronic platform which supports both ADC and DAC conversions. Its software Arduino IDE version 1.6.5 is used for programming the board. We can be infer that GSM accident detector, the IMU6050 accelerometer and gyroscope are used to detect the posture of motion. In the proposed scheme, the gyroscope is to acquire the tilt angle, i.e., pitch, of the vehicle. This is because when the elderly is suffering an accident event, the vehicles tend to lie down, and the pitch angle is usually small. Actually, the work of acquiring the pitch angle of the vehicle can also be accomplished by using a gyroscope which provides the angular acceleration information of the GSM. Furthermore, the tilt angle pitch angle of the Vehicle is estimated by using the IMU6050 in conjunction with the accelerometer. The gyroscope helps in calculating pitch angle which helps in applying the proposed algorithm. The system architecture shows the block schematic of the system. It shows the various levels of the system and their individual functionality. The system architecture is an efficient way of

representing the working of a system.

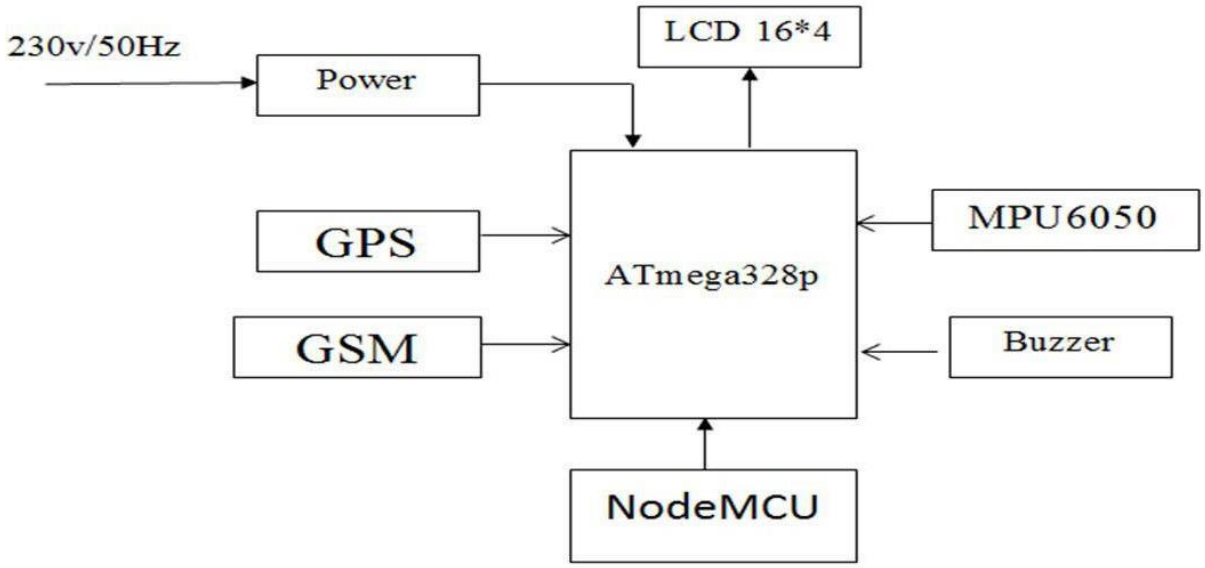


Figure: System Architecture.

Seqence Diagram:

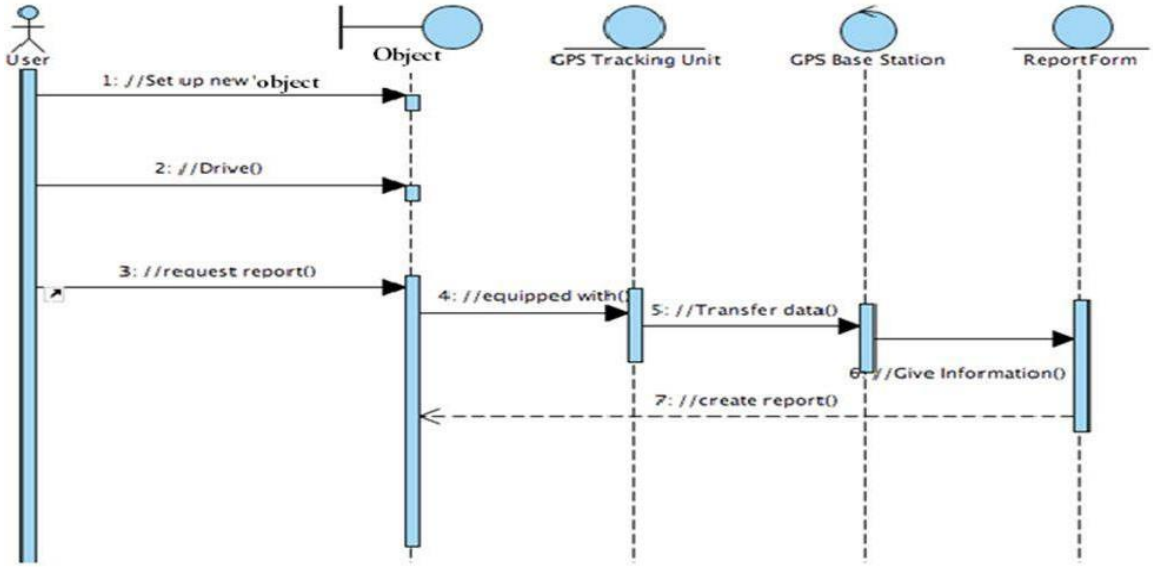
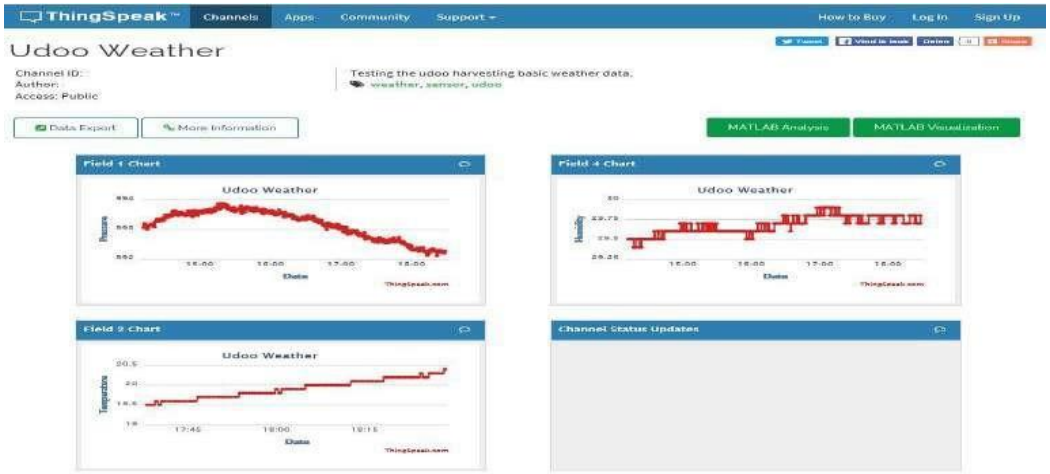


Figure:Sequence Diagram.

4.Analysis Models:

Think-speak Dashboard

The IoT platform used in this project is ThingSpeak. ThingSpeak is an open-source Internet of Things (IoT) application and API to store and retrieve data from things using the HTTP protocol over the Internet or via a Local Area Network. This IoT device could read the pulse rate and measure the surrounding temperature.



Blynk Application based Tracking:

Nowadays one of the popular services of online taxi booking services like Uber, Taxi for Sure, Zoom Car and many more have opened the world of real time location tracking. GPS plays a vital role both in allowing the user and also the service provider to track the taxi.

In this project you will be making an Internet of Things(IOT) based GPS tracker that will track the position of the device in real time. In this project you can use security and transportation service.

Figure:Blynk Application Based Tracking.

Alert SMS:

A message is send on the register number con□rming about GSM and GPS con□guration later as normal body parameters deviates and alert message is send to base station along with the precise location of the person.

Figure:Alert SMS.

5. CONCLUSIONS:

The proposed system uses the IoT for vehicle accident detection and alarming the authorities regarding accidents, vehicle tracking using GPS Modem. In this project we have designed IoT based vehicle accident detection and tracking system using GPS Modem. Hence IoT can revolutionize the way the system interact and respond for the variety of applications especially in case of traffic control.

6. ACKNOWLEDGEMENT:

Apart from the efforts of all the members, the selection of this project topic depends largely on the encouragement and guidelines of our teacher. We take this opportunity to express our gratitude to the teachers who have been instrumental in the approval of this project topic Inspiration and guidance are invaluable in every aspect of life, especially in the Held of education, which I have received from our respected Head Dr. V. H. Patil who has guided me in Project work and gave earnest co-operation whenever required. I would like to express my sincere gratitude towards her. I am pleased to announce that my presentation of the Project work as well as the report would not have been completed without the able guidance and complete support of Mrs. S. Bhavsar who helped me at each and every step in every possible way. She always provided me with access to the latest technology and facilities and encouragement at every point and took active participation in the achievement of my objective. Heartfelt my foremost thanks go to Project guide and help of my well-wishers and colleagues. At last, I would like to take this opportunity to convey thanks to all my sta members, who directly or indirectly encouraged and helped me to complete my work on time and contributed their valuable time in helping me to achieve success in this Project work.

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