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An IOT Based Vehicle Accident Detection and Alert System

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Abstract
As we know the usage of vehicles are increasing drastically, the hazards due to vehicles is also increasing. The main causes of accidents are high speed, drunk and drive, diverting minds, over stress and due to electronic gadgets. This project intentionally deals with accident which occurs due to carelessness of the person who is driving the vehicle. In most of the cases family members or the ambulance and police are not kept informed on time. This results in delaying in getting help. Most of the time, we might not be able to locate the accident because no one knows where the accident will take place. The system introduces accident detection and alerting system which detect the accident. Once the accident occurs to the vehicle system will detect accident and send alert and location of the vehicle on email and to emergency phone numbers.

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I. INTRODUCTION

In present days the rate of accidents is increasing rapidly. Due to employment the usage of vehicles like cars, bikes are increasing. And most of the accidents happened due to over speed. People are going under risk because of their over speed. And most of the times the victim did not get help on time because no one knows about the accident. To reduce this in the country this project introduces an optimum solution. IOT based vehicle accident detection and alerting system is introduced. the main objective is to provide fast help and save lives by sending a location and alert message to the registered Email and registered mobile number and emergency numbers if the accident is major. When an accident occurs, the notification is sent to the registered mobile and email using iftt iot platform in less time. Esp8266(nodemcu) is the heart of the system which helps in transferring the message to different devices in the system. MPU-6050 3 Axis Accelerometer and Gyroscope sensor detect if the accident occurs and the information is transferred to the registered number and Email using nodemcu and GPS system will help in finding the location of the accident spot. The proposed system will check continuously whether an accident has occurred and notifies to nearest medical centers and registered mobile numbers and Email about the place of accident using nodemcu and GPS modules. The location can be sent through tracking system to cover the geographical coordinates over the area.

II. LITERATURE SURVEY

- To protect the vehicle and tracking so many advanced technologies are available now a days. In olden days the information of accident can be transferred, but most of the time place of accident spot cannot be identified. In all vehicle airbags are designed, air bags are used for security and safety travels. The air bag system was introduced in the year of 1968.
- Many other systems have been proposed to deduce the accident. The existing system deals with two sensors where MEMS sensor is used to detect the angle and vibration sensor is used for detection the change in the vehicle.
- The other existing system uses IOT and cloud computing system. Where the vehicle detection is done through SVM (support vehicle machine) that is developed by Ant Colony Algorithm (ACA). Here IOT will monitor the vehicles using magneto resistive sensors.

- Existing system also provides the location of the accident using Atmega 328 Microcontroller and RF transmitter and receiver. The information is sent to the saved mobile numbers.
- Some existing system also provide location and alert on mobile numbers by using gps and gsm device.

III. PROPOSED SYSTEM

Proposed system will provide an automatic detection and alert of accident it also locates the location of the vehicle and send it to emergency numbers and registered mobile number and send alert on email. The system we made is the lower cost then others as we are not using any expensive device like gsm and other sensors. The system just uses the nodemcu as a main controller of the system and other than that we are using MPU-6050 3 Axis Accelerometer and Gyroscope sensor to detect the accident occurs and NE0-6M gps module to locate the exact position of the vehicle.

IV. BLOCK DIAGRAM

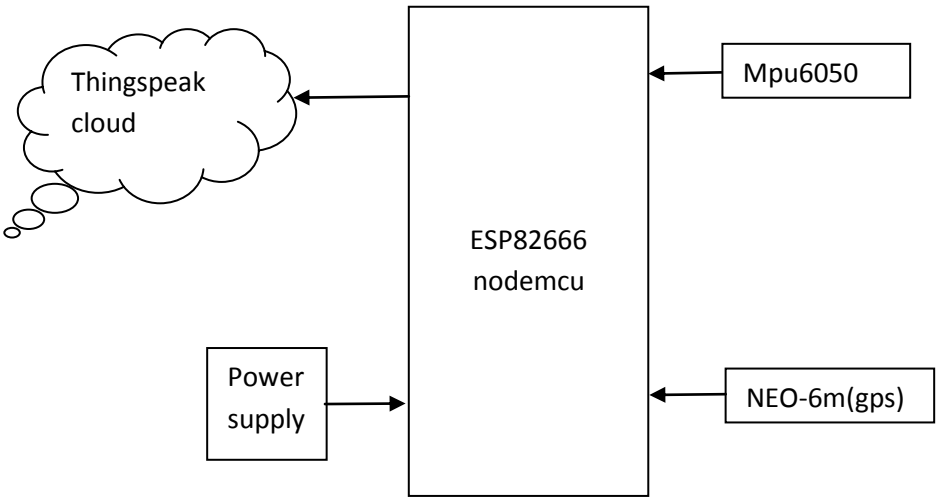


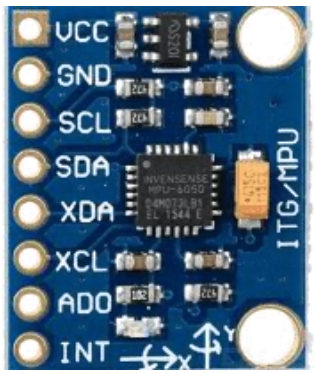
Fig.1: Block diagram of proposed system

Description:

ESP8266(nodemcu): we are using nodemcu for our design as it is low cost device which gives us feature like controlling the devices connected to it and according to the sensor data take action. It provide us an iot platform to send our sensor data on cloud server and take action according to that.

Fig.2: Nodemcu

MPU-6050: MPU6050 is based on Micro-Mechanical Systems (MEMS) technology. This sensor has a 3-axis accelerometer, a 3-axis gyroscope, and an in-built temperature sensor**.** It can be used to measure parameters like Acceleration, Velocity, Orientation, Displacement, etc.



MPU-6050 3 Axis Accelerometer and Gyroscope sensor

NEO-6M(GPS): GPS module is based on the NEO 6M GPS. This unit uses the latest technology to give the best possible positioning information and includes a larger built-in 25 x 25mm active GPS antenna with a UART TTL socket. A battery is also included so that you can obtain a GPS lock faster. This GPS module gives the best possible position information, allowing for better performance. The module has serial TTL output, it has four pins: TX, RX, VCC, and GND.

Fig.4: NEO-6M(GPS)

Power supply: 5v constant dc power supply is used as all the device is work on the regulated dc power supply and it need constant power.

V. WORKING

The system takes the continuous reading from MPU-6050 3 Axis Accelerometer and Gyroscope sensor. The sensor gives us the X,Y,Z axis reading according to that we do action. as first the we will take some reference reading of the x,y,z axis and according to that it detects the accident and send alert. If the accident occurs the reading of the sensor changes drastically and will detect accident according to that and the gps take the latitude and longitude reading and give it to nodemcu. As nodemcu get the reading it will send it to thingspeak cloud. And as the data upload on the cloud it will send email alert and text messages to the emergency number and the registered number. The system will use the IFTT webhooks to create the event and as the alert send to cloud server the webhook event will be trigger and the alert is sent to emergency number and registered number and email. The alert message includes the exact location of the vehicle.

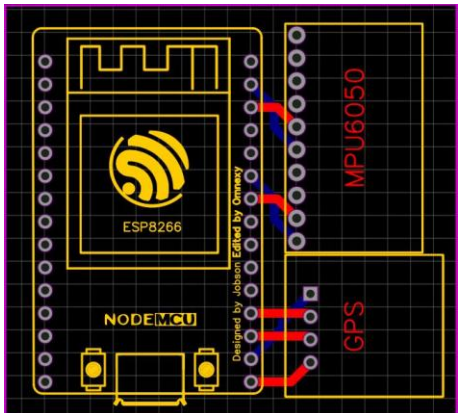


Fig.5: Circuit diagram

VI. CONCLUSION

The proposed system deals with the accident detection and alert. ESP8266 is the heart of the system which helps in sending data to thingspeak cloud and help to trigger the webhook event which will send location and alert to the specified number and email. Mpu6050 sensor will change its reading drastically when the accident occurs and the information is transferred to cloud. Using GPS the location can be sent through tracking system to cover the geographical coordinates over the area. The accident can be detected by a mpu6050 sensor which is used as major module in the system. By using this system we can reduce the death occurs due to late help after the accident

REFERENCES

[1]. Mr.S.Iyyappan and Mr.V.Nandagopal , "Accident Detection and Ambulance Rescue with Intelligent Traffic Light System", International Journal of Advanced Technology and Engineering Research, 2013.

[2]. AboliRavindraWakure, ApurvaRajendraPatkar, "Vehicle Accident Detection and Reporting System Using Gps And Gsm." International Journal of Engineering Research and General Science,2014.

[3]. Miss.Monali D.More,Miss.Shivani L. Lamkane and Miss.Prajakta B. Jadhav, "Vehicle Tracking And Accident Alert System Using Microcontroller", International Journal of Research in Engineering and Science,2021.

[4]. T Kalyani, S Monika, B Naresh, Mahendra Vucha, "Accident Detection and Alert System", International Journal of Innovative Technology and Exploring Engineering,2019.