

Accident Detection and Alert System

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Abstract—Vehicle accident happens due to the negligence in driving and exceeding the speed limits of the vehicle. If these incidents are detected in prior many lives could be saved. This project is about the risk assessment system uses various components and warns rescue team to get help. We need an automatic system which detects the severity of the accidents and send alert message to save one's life. The proposed plan is about risk awareness and detection. It reads latitude if the vehicle met with any incident it sends message immediately to the concerned people for rescuing. The goal of the project is to identify the risks and inform the rescue team in advance.

Index Terms— Risk assessment system, Service provider, Notification system, Risk detection system.

I. INTRODUCTION

The development of transit has put mankind under a lot of pressure. Vehicles are extremely important in our daily lives. [1][2]. A study by Virtanen et al. shows that 4.6% of casualties can be prevented only if emergency services cannot be provided in a timely manner [3]. As a result, the key to saving a priceless human life is the automatic detection of an accident combined with the immediate alerting of an emergency room service. The Disaster Recovery and Warning System is designed to detect accidents and rescue teams in a timely manner. Arduino is a large control unit for communication between devices in the event of an accident, which helps to transmit messages to a variety of gadgets. The GSM module PIN and the GPS transfer module PIN are both detected. This device will detect the car and transmit data to the recipient over links, with the data being transferred to Arduino and a group exit warning delivered by the GSM module. The accelerometer and gyroscope detect the occurrence of an accident with reading generated by motor movement. The vibrating sensor is also used to detect danger by generating electrical energy the impact of motor movement.

II. LITERATURE SURVEY

Many researchers have done research on the subject in terms of risk. Road accident forecasts use daily average per hour and hourly rate [4]. Unlike popular traffic forecasts, real-time traffic risk forecasts are associated with crash events and the real time data that was sent or collected available from different receivers like inputs, infrared detector, camera etc [5]. Predictions of various vehicle accidents are very focused. in changing pre-accident traffic conditions, while traffic detection studies are influenced by changes in post-incident traffic conditions [6]. However, the efficiency of this diagnostic and predictive system is largely limited to the sensors used, the process used to verify risk, climatic condition, traffic flow etc. In addition to the automatic detection system, manual detection methods are available at risk to the driver. The disadvantage of this form of system detection is that the incident must be witnessed by someone. In addition, there are delays and inaccuracies due to

the problem of witness evidence. Compared to these diagnostic methods, the driver-initiated detection system has many advantages including rapid response, additional incident information etc. [7]. However, because of the severity of the accident, the driver may not be able to report it at all. The built-in risk detection system uses a car sensor or airbag sensor by mistake and the GPS location suggests using the GPS receiver's ability to monitor the car's speed and detect the danger according to the speed monitor and send the location and time of the accident. from GPS data processed by the controller. small via GSM network to Alert Service Centre [8]. Accelerometer and Gyroscope ability to retrieve data and detect hazards based on stationary angles and positions. Then send the location of the accident from GPS data processed by a small controller using the GSM network to the nearest hospital. network also notifies family members as well [9]. The accelerometer receives direction when the vehicle collides with a bi-directional axis. Car collisions lead to significant changes in vehicle speed and indicate a direct impact of acceleration on that crash axis. Since the Z axis is oriented to gravity, the X-axis and the Y-axis accelerometer are only required to determine what is happening and how the vehicle collides. Latitude and Longitude are detected using GPS and sent as a team rescue message using the GSM module. The message was received by another GSM module [10].

III. PROPOSED SYSTEM

In the proposed system as shown in figure 1, Arduino Nano is used as a control unit, the communication between the modules of the conversion of better information over time. The Accelerometer can be used to determine the direction of a collision from an axis on three sides movement. Gyroscope can be used for rollover collision behind the roll threshold and pitch The price, weight, and location of gravity car all play a big part in rollover. The device also checks and detect a conflict when the threshold voltage is increased. A buzzer is then provided to eliminate false alarms from the passenger. During the limited signal time the GPS buzzer module collects links from the Google Module. These links to nearby hospitals are notified by an emergency call to them passenger. The hospital authorizes the risk by confirming the accident in a particular area and ensures risk. The rescued family members were notified by accident GSM model.

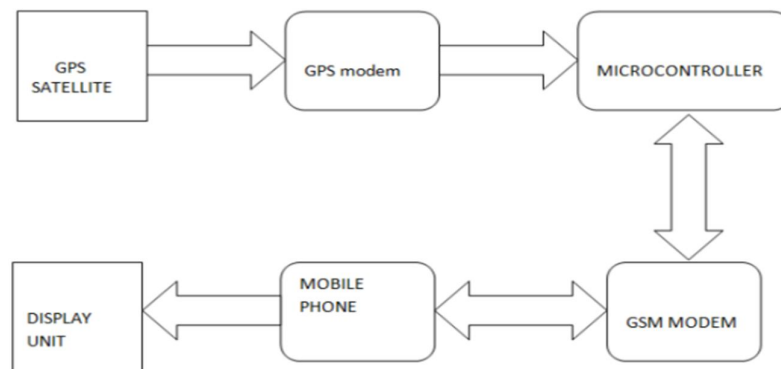


Figure 1: Block diagram of GPS System

Finding a global location separated by other links detect a module called GPS module. This vibration sensor will receive a car vibration that acts as an emergency to detect the module. Arduino collects information from all other modules and sends a message to the recipient in spite of the GSM module. The basic operating principle of the accelerometer is the same as the weight dropped on the source. Piezoelectric, piezo resistive are commonly used. Piezoelectric accelerometers are made of single crystals. Sensors are flexible tools used to measure various processes like to detect pressure. When measuring variations in acceleration, pressure, and temperature, this sensor has an effective piezoelectric effect, forcing the weight by switching to an electric charger. To determine the scent of air with the ability to measure speed and quality. The principle of operation of the vibrating sensor in which different sensor systems detect the detection system. The sensitivity of the sensor can be adjusted depending on the process. As a result, knowing the vibration amplitude ranges where the sensor will be subjected to measure is critical.

Above flow shown in figure 2 tells the flow of the proposed accident detection model, at start the hardware will be initialised and it takes the reading from hardware every second. If the reading overcomes the threshold reading of sensors, then Arduino sends the GPS co-ordinates to emergency dial via GPS. Emergency dialler checks the coordinates at portal and contacts the nearby hospitals for emergency need and waits for its approval.

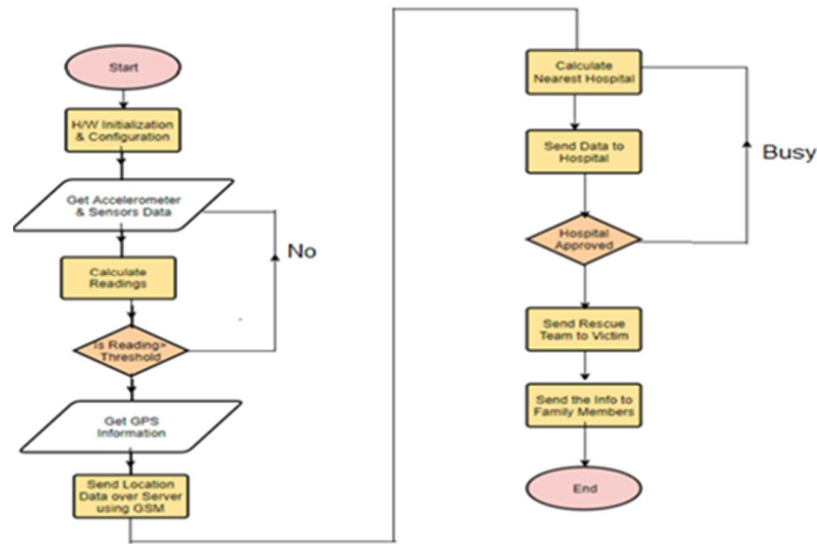


Figure 2: process flow of the model

After the hospital approval the rescue team reaches the location of accident and upon confirmation it informs their family members.

IV. RESULTS & DISCUSSION

The Arduino reads data from MPU-6050 gyroscope + accelerometer module as shown in figure 3. It is based on MEM. It has 8 pins on the chip, to check the I2C connection between the Arduino and MPU 6050, a code must be generated. The title of the telephone library is included, it explains and some variables after this, the translation function should be defined, the set function that normally check the serial connection should be established.

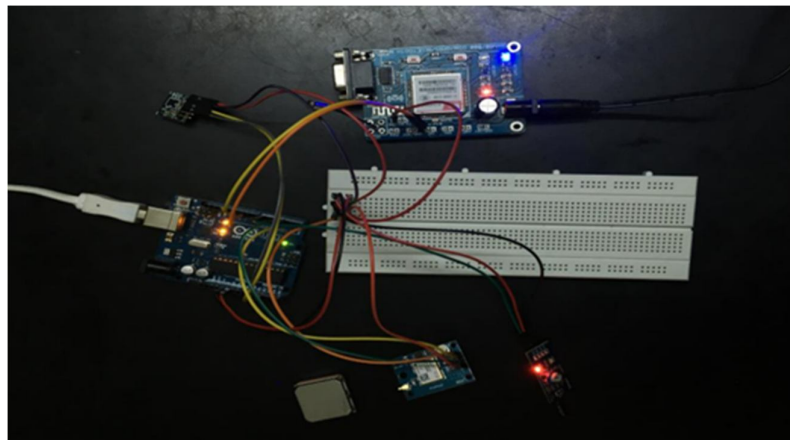


Figure 3: Interfacing controller with all other module

The U-blox Neo-6M GPS module should be tested to see if it can identify place. These symbols point to satellites and tell the recipient where to find them. It shows position adjustment, itself will blink at different values depending on the situation. No blinking shows that searching for satellites. If it blinks every second it shows that position available.

As shown in figure 4, for sending alert message by GSM SIM900A module We must ensure that communication is established between Arduino and GSM. There two ways to do it, one is to connect GSM TX PIN to Arduino RX pin and RX pin GSM module on Arduino TX pin. Two by choosing two PWM-enabled Arduino PWM pins (Pp. 9, 10). It uses the Arduino serial library, where the connection is established, data can be fed directly to GSM.

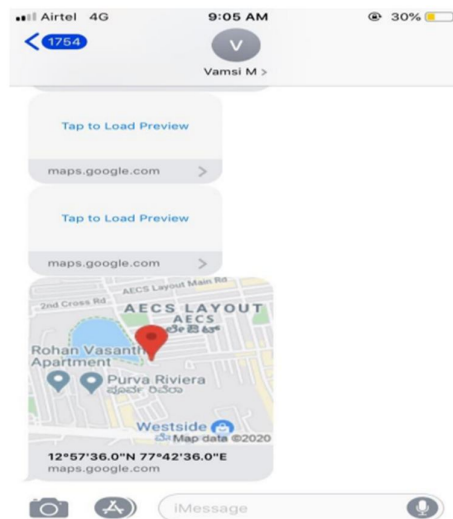


Figure 4: Alert message

V. CONCLUSION

A risk identification system has been proposed to send a warning and a risk identification. It reads the latitude and the data is passed to the nearby emergency services provider if the automobile involved in an accident. The device will pass the information to modules in the system. The Accelerometer monitors the scene of the accident as well as the gyroscope used to determine the vehicle's roller. Information number is registered through the GSM module. Using GPS, location can be sent using a tracking system to integrate location links in a location. The proposed plan contributes to a reduction in accidental deaths. This even downloads an accident scene using a GPS system and transmits a warning notification to an emergency medical service units using a GSM module for saving lives. In this case the mortality rates the risk of accidents can be reduced. The future scope of this program could be some improvement with the use of a wireless webcam can be added to this to take pictures that will help provide driver assistance. Especially in accidents it gets worse as drivers lose control and fail to stop the car. Vibration sensor will work due to received vibration and processed processor. The processor must be connected to a device that can lock the brakes when activated. With this in mind, we can stop the car and minimize the impact of the accident. This system can also be used to control vehicles, food supplies, traffic violations, car rental services etc.

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