COLLIDE INFORMATION CAPTURING FOR VEHICLES AND ALERTING SYSTEM USING RASPBERRY PI VIA E- MAIL

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Abstract - *The aim of the project is the Safe Road Travelling and emergency alerting when any accident occurred. Now a days we are seeing many accidents in cities and outskirts but in many cases we not able to share the situation of the victim to their loved ones and if any accidents occurred at outskirts of city then they not able to contact their relatives. So, we came with a solution that incase of any accident of vehicles like between vehicles collision, hitting the road side properties and fallen in ghat road) then the system turns on reads the position of the vehicle, GPS location of the vehicle and through webcam it shoots the video and capture the image of the victim for showing the exact situation of the victim. Then it will send the GPS location, video and photo through the given Email.*

Blockchain – Based Incentive Mechanism for Accident Alert Message System. The main objective of the paper is to encourage the users to generate and endorse accident alert messages from the accident zone without revealing the user's identity. Also, some incentives to the users are paid to the message generators and endorsers and the transactions get stored based on the Blockchain technology; hence the privacy of the user is preserved. Our proposed system ensures the reliability of alert messages without revealing the privacy of the user and is reliable and efficient in the non-fully-trusted environment.

Keywords: Android Smart Phone, Mobile Application, GSM (Global System for Mobile Communication), Alert Message, GPS (Global Positioning System), Blockchain, raspberry pi,.

1.INTRODUCTION

Vehicles are an important way of transportation all over the world. There are many cases of road accidents every day in the world. Such accidents create traffic jams on road from hours to days, consequently resulting loss of valuable time. Frequency of road accidents is very high which causes a lot of damage to human life and valuable properties. The number of accidents is very high in hilly and fog affected areas. Commonly many road accidents are caused by collision between vehicles due to the inability of the drivers to gauge the perimeter of their vehicles and other reason is unawareness of nearby vehicles. The high incidence of on road accidents due to collision propels our concern on collision avoidance system mainly for hilly and dense fog affected areas.(8)

Now a days the percentage of accidents increasing and many cases they will get help. But in few cases, they won't get help from anyone and we focusing on this. The aim of the project is to give emergency alerting signal when any accidents occurred means. We location to mobile with alerting message and record the video of victim and take photo, then send the video and photo through email. Implement a system in the vehicle that will send the GPS, traffic accidents are one of the main reason of fatalities in the world many lives can be saved by reducing the time between the occurrence of an accident and the arrival of first help at its location. In research literature numerous accident detection and notification systems were proposed to solve the problem. Now we have devoted to design a system that integrates Global System for Mobile Communication (GSM) and Global Positioning System (GPS) technologies to locate and send a Minimum set of data (MSD) Containing important information about accident collected using different sensors such as the accident type, longitude and latitude, video and photo of the victim.

2. LITERATURE SURVEY

This paper present principle of a traffic management and road monitoring application using the latest generation of IT and mobile telecommunication systems based on an intelligent system with self-learning function for urban traffic junctions. (2) This system will allow automatic adjustment of green times depending on road intersections traffic. For the implementation of this IoT project, we use a Raspberry Pi, a webcam and Thing Speak server to analyses traffic on a busy highway using image processing (6). With Simulink we design and deploy a traffic monitoring

algorithm to the Raspberry Pi, and we analyse and visualize the traffic patterns using ThingSpeak, an IoT analytics platform. A remote road monitoring system principle is also described.(7) This system uses modern communications equipment for periodically reading and transmitting parameters such as road temperature, humidity, wind intensity and vehicle weight using different type of sensors.

From this research paper we going to know the traffic at a particular area and also the weather conditions, road types and accidents. It will share this information with the help of GSM module for avoiding the accidents

3. EXISTING SYSTEM:

The MEMS sensor and Piezo electric sensors will always read the values and send to the raspberry pi meanwhile GPS will start tracking the location all the time. MEMS sensor gives the analog readings but in raspberry pi we won't have inbuilt analog to digital convertor so we use the adc-mcp3208 for conversion, (1) we specify the thresholds values for mems sensor if we get beyond that values then the raspberry pi will send the command to webcam, gsm and start taking the gps values. Now send this gps location to gsm modem and then the start sending the alert message with that location to the specified mobile number. (3) In the meanwhile, webcam start taking video upto specified duration and capture the image of the victim then send the both video and image to raspberry pi then the raspberry pi send this video and image to the mail id given by us, then start working like initially. The same process for the Piezo sensor also when it on.

4. PROPOSED SYSTEM:

The main existing problem in road accidents is not getting the help at the right time before the situation becomes worst and, in some cases, not even get any help from any one. So, to overcome this issue we came up with a project that is very helpful for safe road traveling. Here we place Piezo electric sensor for detecting if any collision occurred or not, MEMS sensor for telling if the vehicle was tilted, GPS6MV2 will locate the area and get the exact location, Webcam will on and capture video and photo of the victim, ADC – MCP3208 work is converting the analog value (given by MEMS sensor) to digital value and send to Raspberry Pi, Through GSM (SIM900A) we get the accident alert message and location to the given number and Now Raspberry Pi it plays a key role receives the input from the sensors and send the command to webcam, GPS, GSM and finally send the video and photo to given mail.
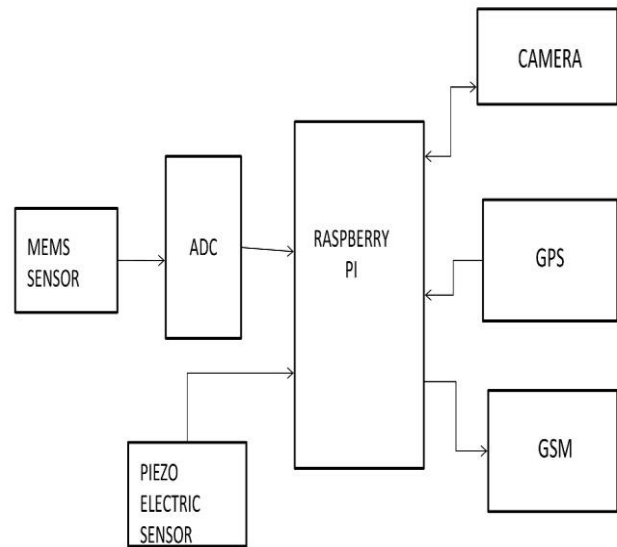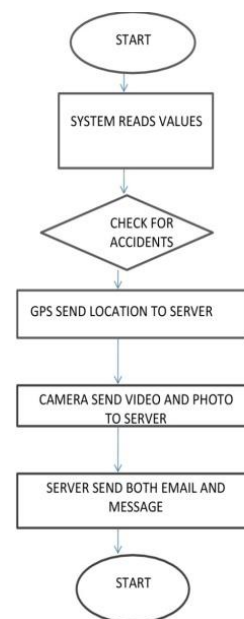

Fig -1: Block diagram of proposed system

Fig -2: Flow chart of proposed system

5. MODULE DISCRIPTION

Raspberry Pi 3 is a development board in PI series. It can be considered as a single board computer that works on LINUX operating system. The board not only has tons of features it also has terrific processing speed making it suitable for advanced applications. PI board is specifically designed for hobbyist and engineers who are interested in LINUX systems and IOT (Internet of Things).

5.1 PROCESSOR:

The Broadcom BCM2835 SoC used in the first generation Raspberry Pi includes a 700 MHz ARM1176JZF-S processor, VideoCore IV graphics processing unit (GPU), and RAM. It has a level 1 (L1) cache of 16 KiB and a level 2 (L2) cache of 128 KiB. The level 2 cacheis used primarily by the GPU. The SoC is stacked underneath the RAM chip, so only its edge is visible. The ARM1176JZ (F)-S is the same CPU used in the original iPhone, although at a higher clock rate, and mated with a much faster GPU. The Raspberry Pi 3 Model B uses a Broadcom BCM2837 SoC with a 1.2 GHz 64-bit quad-core ARM Cortex-A53 processor, with 512 KiB shared L2 cache. The Model A+ and B+ are 1.4 GHz
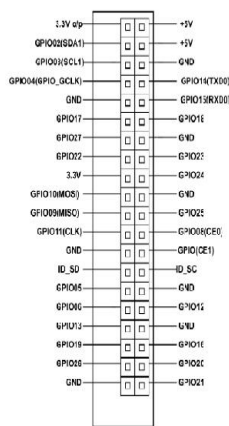

Fig -3: Hardware component raspberry pi

5.2 2NEO-6MV2 GPS MODULE:

The NEO-6MV2 is a GPS (Global Positioning System) module and is used for navigation. The module simply checks its location on earth and provides output data which is longitude and latitude of its position.It is from a family of stand-alone GPS receivers featuring the high performance u-blox 6 positioning engine. These flexible and cost effective receivers offer numerous connectivity options in a miniature (16 x 12.2 x 2.4 mm) package. The compact architecture, power and memory options make NEO-6 modules ideal for battery operated mobile devices with very strict cost and space constraints. Its Innovative design gives NEO-6MV2 excellent navigation performance even in the most challenging environments.

Fig -4: 2NEO-6MV2 GPS Module

5.3 SIM900A GSM MODULE:

Then SIM900 GSM/GPRS shield serves as a solid launching point for you to get you started with IoT. SIM900 GSM/GPRS shield is a GSM modem, which can be integrated into a great number of IoT projects. You can use this shield to accomplish almost anything a normal cell phone can; SMS text messages, Make or receive phone calls, connecting to internet through GPRS, TCP/IP, and more! To top it off, the shield supports quad-band GSM/GPRS network, meaning it works pretty much anywhere in the world.

5.4 GSM MODULE:

Digital cellular technologies such as GSM (Global System for Mobile Communications) are used to transmit mobile data and voice services. In 1970, Bell Labs realized this concept through a mobile radio system. As the name suggests, this is the name of the standardization organization, which was established in 1982 to create a common European standard for mobile phones. This technology accounts for more than 70% of the global mobile digital subscriber market. The technology was developed using digital technology. Today, GSM technology supports 1 billion mobile phone users in the above 210 countries/regions. This technology can provide simple to complex voice and data services. This article provides an overview of GSM technology.
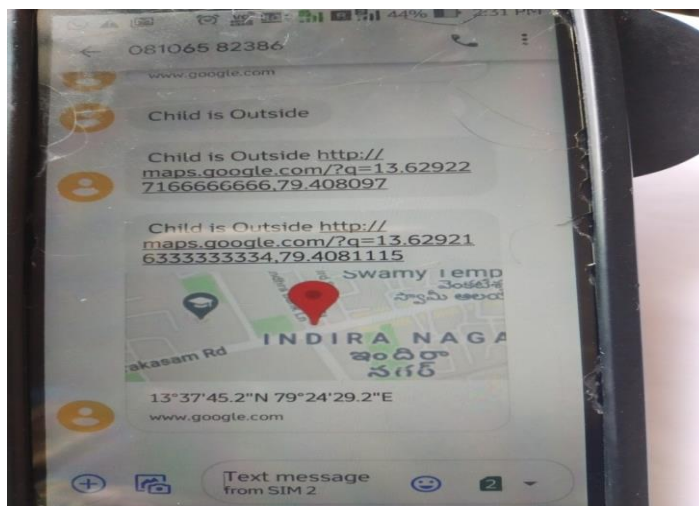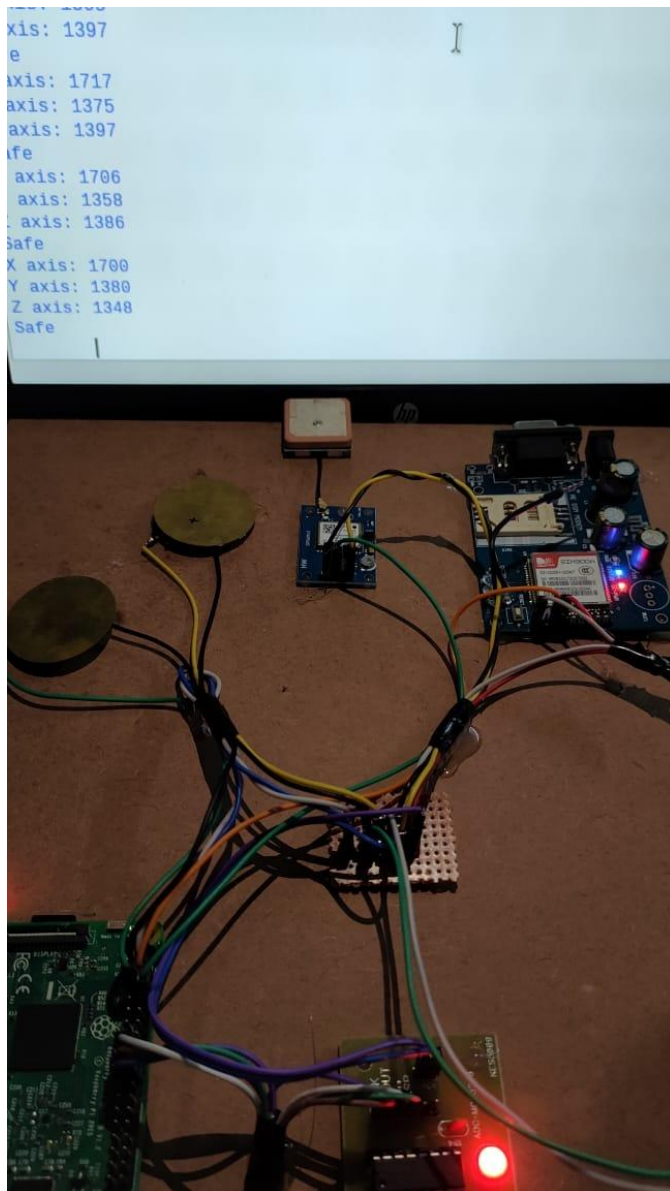

Fig -5: GSM Module

6. RESULTS AND CONCLUSIONS

The below fig-6 and Fig-7 shows the circuit setup. The shows the output. If accident occurred then the relatives will get sms in their phone with message "Accident " along with map link location, which is shown in first output figure. Similarly they will get images and video of person, which is shown in second output figure.

In this paper, we proposed and implemented an IoT system which is very useful to preventing accidents. An effective solution is provided to develop a system for vehicles will detect the accidents then the message send alert to family members. The communication with family members system is designed with GPRS and GPS module. For alcohol detection MQ-3 sensor is used and for accident detection vibration sensor is used. Ignition off module is important module which is done by putting relay. The whole control system has the benefit of small volume and high reliability. Future scope of this system is to decrease accidents numbers and providing useful emergency solutions as fast as possible. We will try to get accurate measurements of sensors and their response time. This system brings modernization to the existing technology in the current vehicles and also improves safety features.

FUTURE SCOPE

This system has the future scope of reducing the number of accidents and it also provides useful emergency solutions in a faster way. In this we will try to get accurate measurements of sensors and better response time. This system brings modernization to the existing technology in the current vehicles and also improves safety features.

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