

Helpdroid the SOS System

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Abstract— “Helpdroid” we inspire by movie-Prema the project we provide the accident detection in any place. We provide the help to injuries peoples. When the car or bike crash together then the GPS and GMS with the crash sensor send the digital signal and send the message and call to near police station, ambulance and there related persons. The GPS send the location of accident happened so the police can trace the place of accident.

Keywords: Helpdroid, SOS System, GPS, GMS

I. INTRODUCTION

The worldwide increasing traffic and accident happened. Large number of the people die in the accident in whole world. injured and death in accident uncovers the story of global crisis of ROAD SAFETY ACT in India 2018 show that more than 1,50,000 people are killed in road crashes in India every year. That's about 400 fatalities a day in the world die 105 people each minute, 151,600 people die each day. 55.3 million people die each year. The most reason of death in accidents is do not reach the emergency help, due to the delay in information of accident is happened that's why ambulance is not reaches the place. Thus, in the case of car accident detection and notification system the emergency medical services to person. In every minute is pass while an injured victim not receive emergency call or medicine care can decreases their survival rate, for example, accident happened the victim response time by 1 minute correlates to a 6% difference in the number of lives saved. in early smartphones have a sensors that detects the device in which they are being used, such as accelerometers, GPS, compasses, etc. systems, The Helpdroid is combined with the most recent manufactures cars, such as BMW and General Motor (GM), which depend on the vehicle on-board sensors to detect the accident and utilize the built-in radio to notify the emergency responders. However, the fast evolution of the technology requires the upgrading the software or even some hardware features of the vehicles in order to install The Helpdroid the S.O.S System, while installation cost of these system inside the vehicles is less expensive. Also, these systems are not considered as a standard option for all vehicles in U.S and other countries, these systems are just combined with specific type of the vehicles in U.S such as BMW and GM. In these facts the ones that motivated the researchers to proof the advantages of using the smartphone in development Helpdroid the S.O.S systems. The benefits of the smartphone that can be develop the Helpdroid S.O.S systems are: • the user renews the smartphone much more frequently compared with the car or bike the more updated in software and even in hardware. regardless, Helpdroid the S.O.S System that predicts the accident is happen based on sensor to the smartphone without need to interaction with a car. •the low cost in short cost is zero is compared to traffic •the owner carry there smartphones in any place.

II. TWO STATE REPRESENTATION

The two state representation we are developed.

A. Software:

The overall system architecture is constructed by the mechanisms which is proposed by the system structure together. The proposed system, called Helpdroid the S.O.S System, consists of two phases; the detection phase, explain in the next section III-A, is used to identify the accident is happen, and notification phase, explain later in the section III-B, is used to inform the emergency center for fast response and recovery.

1) Detection Phase:

This phase constitutes the main objective of this work which is responsible for discovering the existence of car accident. By the help of smartphone accelerometer sensor the detected phase gives the current information, To determine the current location of the car accident GPS receiver is used. And also the Smartphone Accelerometer sensor is used to continue the detection process.

Information to record the G-force (acceleration force) experienced by the use of Smartphone GPS receiver the information is been recorded to the G-force (acceleration force) which is been experienced; another way to use detection phase always keeps the record GPS data to keep the record of vehicle speed. Vehicle speed is used to increase the probability of detecting an accident based on accelerometer sensor information. Smartphone microphone: The smartphone microphone is used to detect high- acoustic events such as sound of an airbag deploying. The smartphone microphone is used to increase the probability of detecting an accident base on sensor information together with GPS data.

a) Detection Phase:

The most important factor that is use by Helpdroid the S.O.S systems which is the G-Force value of 4G is used by the system to detect the car accident. experience by smartphone sensor. Also, mentioned that, several studies have been performed rear-ended impact with volunteers; the data used in these studies mean a unique opportunity to analyzed how acceleration influences the risk of injury. The results that most occupants suffer from neurological signs, had a mean acceleration above 4G. Actually G-Force value is not enough evidence, to detect car accidents, which would lead to false positive sign. The propose of detection phase, running inside the smartphone, continuously reading the smartphone sensor to detect the collision. In the case of an accident, the smartphone experienced the same acceleration force experienced by the occupants of the vehicle, because smartphones are frequently carried in a pocket attach to the occupants [4]. In fact, there are several issues that have been considering during the accident detection phase. These issues are listed and analysed as follow:

To filter out acceleration values caused by dropping the phone inside the vehicle or sudden stop, whose acceleration values could be interpret as car accident, the

empirical results mentioned in when the smartphone is dropped inside the vehicle, it experienced approximately 2G's on the y-axis and z-axis with nearly 3G's on the x-axis before it is reset.

The Helpdroid application consists of the following Activities which are listed as follows:

- Activate/Deactivate Accident Detection Activity
- Upload Image/video Activity
- Choose Emergency Contact Activity
- Setting Activity

2) System Server Side Implementation

According to the propose method of notification phase, presented in section III-B, the system allows to send two types of notifications to report the accident happen, which are Driver, and/or Passenger notification and Bystander's notification. These notifications are sent, via utilizing smartphone built-in 3G connection, to the system server-side and finally reside in the database. Thus, to find out about an accident, the authorized emergency responder in the emergency center needs to access to the whole accident notifications that are resided into the database. Therefore, according to notification phase architecture of the emergency responders should contact the web server, through the internet, for requesting the notification of web page. In The emergency responders use web browser to retrieve and display the accident notifications, as shown in Fig.14.

Fig 14 Communication between System Server-Side and Emergency Responder.

The all useful and, new web technologies, are used to develop the system server side, are listed as follows:

- 1) Apache is chosen as a web server.
- 2) MYSQL is chosen to be the main database.
- 3) Notification Phase

Helpdroid accident detection phase without notification phase is like doing nothing. Logically the most

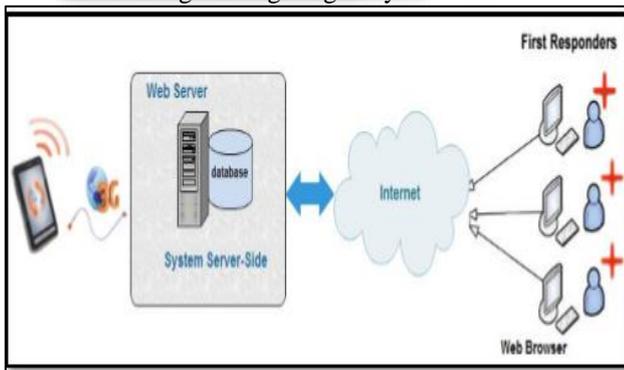


Fig. 1: Notification Phase Components

important task of the Helpdroid detection phase is the accuracy of the detection process, while the most important task of the notification phase is the speed and information that are supplied to the emergency responders to respond for an accident. 1. Driver and /or Passenger Notification

When detection phase confirms that an accident is happen then the smartphone GPS receiver is required to find the location of the accident and then utilizes the built-in 3G data connection to send accident information such as: the speed of the vehicle, the GPS location, airbag deployment

assert, time of the accident, information are sent to emergency responders for fast recovery as shown in Fig. 7.

4) Bystander's Notifications

Fig.8 shows how the Helpdroid allows for uninjured people and bystanders to send multiple from an accident location. Also smartphone GPS receiver is required to find the accident location and then convey this notification to emergency responders.

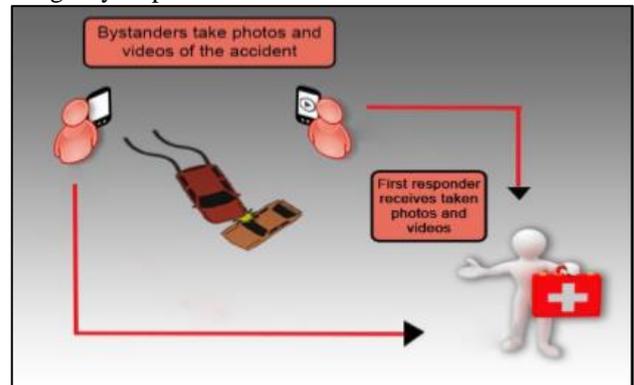


Fig. 2: Bystanders upload Video and Images of the Accident

5) SMS Notification

To establish the SMS phase, it is found an good idea to notify the contacts of the driver/passenger, such as family member, about the accident through sending SMS that content the location where the accident is occurred.

B. Hardware

1) GPS:

We are used GPS in Helpdroid SOS System is to navigation and Tracking.

Use of tracking system is ti keep trace of vehicle without knowing the driver whereas by the use of navigation driver can be reached to the final destination.

Hence the architecture of the navigator and the tracker is more or less same

When an accident takes place in any area GPS system get on and tracks the location and the position of the vehicle by the SMS or by the call by using GPS person gets alerted and known and emrgence services can be provided. GPS module sends the current state data in the NMEA format which is the most standard type and format which stands for National Marine Electronics Association. NMEA has many different and several format but the unique format which is used in this project is that GPGGA.

And related data with that sentence and another information which is to be send.

GPGGA is related to be Global Position System.

2) GSM:

GSM stands for Global System Mobile communication. GSM is a transformer load media between sender and receiver which has its own unique characteristics.

In this Helpdroid SOS System project GSM is highly efficiently used to control and monitor DC Motor.



Examples of GSM modem which is used to sending SMS through GSM like temperature sensor or solid state relay .due to this practice the advantages of GSM is no need to waste time by doing the work manually and transportation of SMS or the means of call and medical services.

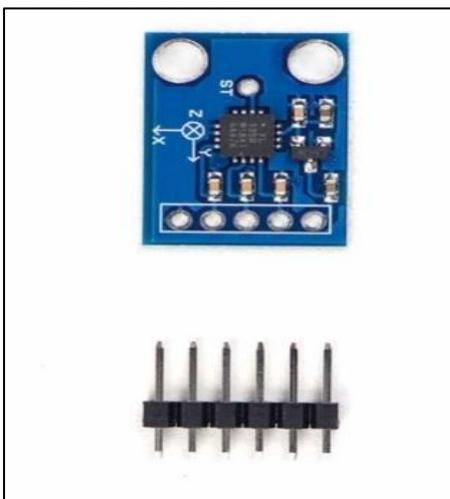
Hence the GSM is considered or declared as highly efficiently communication by the mobile device which as more application in industrial controls, automobiles any applicants which can be controls anywhere.

Another Advantages of GSM is enomically country can be improves and the less expensive product for the customer so that all of us can be prohibited. And can be used in anywhere anytime is available.

Hence GSM is mode of communication which is very useful and the main objective of GSM is to create digital system which has low price

3) ADXL 335:

In the helpdroid the S.O.S system project we use the sensor which is named as ADXL335 Which is accelerometer which is the electromechanical devices which is used to measure the accretion force due to navigate in the unit of g .ADXL 335 has three axis x, y, z which gives the voltage output propagation to the acceleration.



Application of ADXL335 ARE:

- GPS navigation system.
- RC and Robots systems
- 6D orientation detection

Gaming and virtual reality input devices.

Motion –activity function

Features:

Powered LED

Analog output

Onboard LDO voltage regulator

Built in logic level convertor for 12 V

All necessary components are popularly and easy to be available

III. RELATED WORK

A. Circuit Explanation:

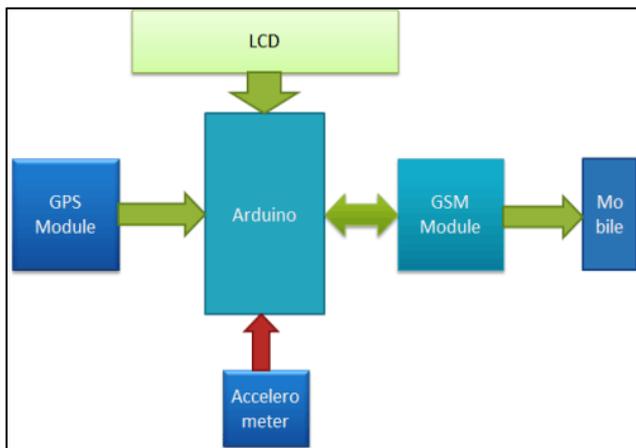
In the project of helpdroid the S.O.S system the circuit connections is very easy and simple .To the digital pin number 10 of Arduino tx of GPS is connected With the help of Software Serial Library, which is used to allowed serial communication with the pin number 10 and 11 and made them Rx and Tx respectively .By keeping the GPS Module open of the left of the Rx pin . the use of pin number 0 and 1 of Arduino for serial communication which can be made activated y the using Software Serial library for digital communication. To power the GPS Module 12 volt supply is used.

The GSM module of Tx pin and Rx pins which is to be connected D2 and D3 with respected to GSM module's Tx which is connected to the D2 of arduino and Rx pins of a GSM module connected to pin D3 of Arduino. For the interfacing of GSM, we have to used software serial library. We can powered the GSM module is by 12v supply. LCD's data pins D4 which id connected to pin 6, D5 which is connected to 7, D6 which is connected to 8, and D7 are connected to pin number 9 of Arduino. RS and EN are the command pin of LCD are connected with pin number 4 and 5 of Arduino and RW pin which is read and write pin which is directly connected with ground. To set the setting contrast or brightness of LCD which will be done by the help of potentiometer.

The detection of car accident is done by the Accelerometer which has x, y, z axis ADC output pins which are connected to the Arduino ADC pin A1,A2,and A3.

B. Working Explanation:

In this Helpdroid the S.O.S system project, Arduino which is main part of the component which is used for controlling w hole the process with the help of a GPS Receiver and GSM module. GPS Receiver is used for the detection purpose of the vehicle like car and bike or any other vehicles , GSM module which is used for sending the alert SMS with the help of traces coordinates and the link to Google Map which is already save by the data . Accelerometer namely ADXL335 is an accelerometer which is used for detecting accident. And an optional 16x2 LCD is also used for displaying themes status any other alert sms. We have used GPS Module SIM28ML and GSM Module SIM900A in this helpdroid the S.O.S system project.



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IV. CONCLUSION

The Helpdroid the S.O.S system is an software. Where the device interact without major human activity. The Helpdroid the S.O.S system provide the solution for car accident detection and response in lack of emergency situations, like road accident, traffic accident etc. In Real time implementation of this idea would result in saving of many people's lives due to inefficient accident response as well as eliminate the need of physically reporting in the accident. The Helpdroid the S.O.S system also brings the reliable in the existing emergency service, thus helping in improving the emergency services. This Helpdroid the S.O.S system can be installed in motorcycles in future.

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