Accident Detection and Alerting System

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ABSTRACT: Basically, security plays important role in our every aspect of life. Coming to the purpose of travelling security plays key affect to every person. As population is increasing day by day the needs for a person that is the use of automobiles also increased. Because of this many accidents has occurred on the road. Many of the people died in the accidents and the important aspect of causing road accidents is that due to lack of emergency facilities. To overcome this problem a system is existed which ensures the emergency facilities. The main intent of this existed system is that if any accident has occurred then sensor gets activated and automatically sends a message to the nearby hospital or police station. Here sensors are devoted to the micro controller and the space navigation system GPS gives perfect location where the accident has occurred. At last we can reduce accidents by using this existed system by sending an alert notification to the nearby hospitals.

I.INTRODUCTION

As population in the world increases in the same way the needs of population also increased. One of the main requirements of the today's population is automobile. The need of this automobile has increased a lot and because of increasing of vehicles a number of accidents has occurred in the world. Here in some cases we cannot help The victim where the accident has occurred and because of this the victim can loss his life. Due to lack of emergency facilities in our country the death rate becomes high.

Coming to the study of crash analysis, they say that traffic accidents are prevented by the use of advanced life saving measure. This step started to think the people in an advanced way and focused on a particular intent that is how to give the basic information to the hospital when accident has occurred. So to develop this content we take three axis accelerometer and GPS tracking system work for accidental monitoring. Because of this design the number of death rate or accidents will be less. In this system if accident has occurred the information is send to the hospital or police station.

Here GSM plays important role in entire system because it sends a message to hospital when accident occurs. Generally this message is taken by the geographical coordinates of the accident spot with the help of GPS. GPS not only reads the message but also tracks the location so that victim can receive medical services as soon as possible. Now here a microcontroller is introduced which gives information about the accident. Firstly a key is provided to the driver, if the accident is occurred then this key decides that accident is major or minor. For example now accident has occurred is normal then driver press the key, after pressing the key microcontroller indicates that the accident is normal. In the same way if the accident occurred is not normal that is

major then at that moment the driver was unable to press the key. Now the microcontroller get coordinates from the GPS modem. This modem sends information to the GSM modem. By this GSM the information is send as SMS to the required authorities. Because of this they can take immediate care to the victim and provide medical services.

II. PROPOSED SYSTEM DESIGN

The below figure.1 shows the block diagram of accident detection and alerting system. In this block diagram we use microcontroller which consists of an external antenna, GSM module with SIM card and shock sensors. At first we will give 9v supply to the microcontroller board. After giving supply the both GPS, GSM shield and impact sensors will drive the power from the board of microcontroller itself. Now the circuit is divided and then the both modules of GPS and GSM will be turned on. Here the system holds for a moment when GSM module receives a signal and gets registered with the surrounding network. The system moves on until when the sensor gives a positive output.
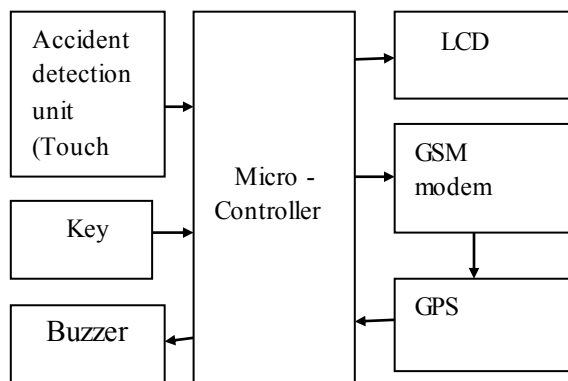

FIG. 1. PROPOSED SYSTEM

This can be explained with an example if accident has occurred the microcontroller takes the present location of the vehicle by using GPS module and sends information as SMS to the contacts which they have stored. Because of this medical services provide faster when accident has occurred.

III. SYSTEM IMPLEMENTATION

Now let us discuss each component which is used in above block diagram. Let us first see about the microcontroller. Basically microcontroller relates the both hardware and software company to dump a program on the board. Here the users company designs and manufactures the microcontroller kits to build the digital devices. The entire operation depends upon the microcontroller board. In Present technology we are microcontroller. Here the both analog and digital I/O pins gets interfaced with the system to get better expansion of the board. In the same way we use serial communication interface to load programs from the personal computers. This is the hardware part that is manufacturing part coming to the programming part. To program the microcontroller we use the below flow chart which is shown in figure.2. The main purpose is to design and write a program.

Coming to the GPS and GSM modules, first discuss about the GPS module. The abbreviation of GPS is global positioning system which is used to detect the longitude and latitude of a particular position by

showing perfect time. By using these values we can detect the particular location or position. Actually coming to our existed system the main intent is that to detect the place where accident occurs. So this plays an important role in our existed system. The main intent of the latitude and longitude sources is to locate the position of accident. Global positioning system synchronies the information from the satellite for every second.

As discussed earlier that global positioning system is a satellite navigation system which sends and receives the radio signals. The main advantage of using this global positioning system technology is that it regulates the location, velocity and time in any weather condition. One of the applications of this system is that to track the vehicle by using GPS receiver. Now the receiver gives the information in the form of latitude and longitudes. As discussed earlier that this process is done only by GPS satellite and the GPS module is attached to the vehicle to get track the position. This is about GPS module now let us discusses about the GSM module.

Coming to GSM it is a digital cellular technology where the data services and voices are transmitted. The main advantage of using GSM module is that we can track the vehicle continuously and also we can give information to local ambulance when accident has occurred. Basically it is an in expensive device which reduces the errors which are related to the accident notifications. Now if we want locate the

vehicle after the accident, and then the victim has to send a message to the modem. Her he controlling unit is attached to the vehicle as discussed earlier. The controller unit is the combination of both micro controller and GSM modem which is interfaced to it. The man function of microcontroller is to check continuously that a message is received from the modem or net. In such a case the message is received then it transmits information to owner of vehicle. Basically this technology is of second generation and it is used all over the world. Generally GSM device contains an SIM slot where we can insert an SIM card into it with a unique number. Now this GSM device should consists of a unique number which is known as IMEI number which is different for every hardware kit.

Now coming to the shock sensor, the main purpose of shock sensor is to detect the accident. There are many types of sensor used to detect but here we will use single stage sensor which detects the hardware impact acted on it. After that sensor gives output of +5v and it is connected to INT which is pin 2 of processor. For a car these types of sensors are connected to the all sides to detect the position where impact has occurred. If it detected then the output of sensor send to the OR gate to select one impact.

IV.SOFTWARE IMPLEMENTATION

As discussed earlier that the main intent of this accident detection system is to create a low cost solutions for tracking accidents. Basically the existed system divides the

work into two phases. At first phase the microcontroller detects the pin where the impact sensor is connected and waits for an input message to get active. Coming to the second phase GPS receivers carry the location after measuring. Here GSM module generates an SMS which consists of information of accident location. To process the programming languages and wiring projects it takes help from IDE. The main intent is to develop a program.

```
         ( start )
             |
      ┌──────────────┐
      │ Power on     │
      │ modules      │
      └──────────────┘
             |
      ┌──────────────┐
      │    wait       │◄────────┐
      └──────────────┘          │
             |                   │
          ◇ Is              ┌────────┐
          accident ────No──►│        │
          detected          └────────┘
             |
            yes
             |
      ┌──────────────┐
      │ Get location │
      └──────────────┘
             |
      ┌──────────────┐
      │ Register GSM │◄──────┐
      │ module on    │       │
      │ network      │       │
      └──────────────┘       │
             |                │
          ◇ Is it       ┌────────┐
          registered ──No─►│      │
                          └────────┘
             |
            yes
```
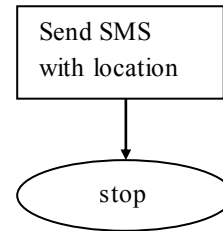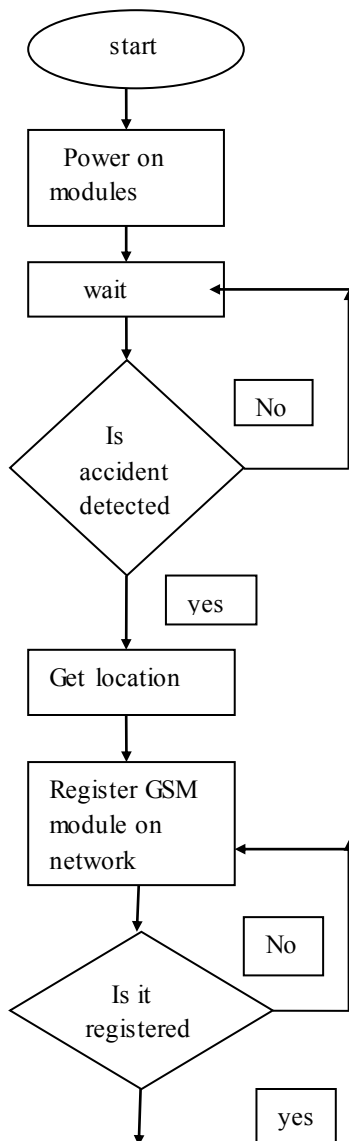
Fig. 2. Flow chart for accident tracking

To develop program the code editors will be there with some special features like syntax highlighting, automatic intending and many others. After this we should upload and compiles the program with a single click. Now let us see the flow chart which is shown in figure. 2.

In the above flow chart we can observe that how to track the vehicle when accident is occurred. Here first the process in the system will be started. After starting all the power modules will be get activated. To detect the accident it waits for a moment. By the GPS modem it gets the present location where accident has occurred. Now the GSM modem will register the network and sends message to the nearby hospitals.

V. RESULT AND DISCUSSION

At last we can conclude that if accidents are occurred then by the help of our proposed system we can send the information as SMS to the nearby hospitals to save the life of victim. The message will be sent by the help of GSM module. This module plays major role in our project. After sending information then this information is added to the accident alerting message.

VI. CONCLUSION

The main intent of this project is to design an accident detection system by sending an alert notification to the nearby hospitals. In the same way this existed system is more advantage to use in present generation because the components which are used in the system are of low cost, small size and portability. This existed system can overcome the accident problems and the time required to search the location where accident has occurred is very less. By this we can save many lives and provide better emergency facilities to the victim. This is most widely used in the applications of desert places and during night time. So this accident detection system is more benefit for future use.

VII. REFERENCES

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