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SMART ACCIDENT DETECTION DEVICE

Krushna Hare[1], Nusrat Mohammad[2], Susmita Mundhe[3], Prof. Suhas Kothawale[4]

UG Student, Department of Computer Engineering, JSPM's ICOER, Pune[1,2,3]
Assistant Professor, Department of Computer Engineering, JSPM's ICOER, Pune[4]
krushnahare2161@gmail.com[1], nusratmohammad33@gmail.com[2], mundest17@gmail.com[3], suhas.icoer@gmail.com[4]

ABSTRACT: **We live in a society where accidents happen daily and regularly due to which human lives will be lost because they didn't get the medical assistance at right time. In India more than one and a half lack persons die due to road accidents per year. In this paper we have made an attempt to develop Smart Accident Detection Device (SADD) which provides medical assistance in time and save the valuable human life. This device can be fitted into Vehicles like Bus, Car etc. Whenever any type of accident is detected this device will inform to the nearest Hospital as well as police station, then after identifying patient it will also inform to the Patient's relatives, through which we can save the human life.**

Keywords- *Accident Detection, Vibration Sensor, Impact Sensor, GPS, GSM, Finger Print Scanner, Micro-controller*

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I INTRODUCTION

Car accidents happen daily and regularly these days due to which human lives will be lost. The major reason behind these accidents is carelessness and fault of the driver. Another reason behind this type of accident is our developing technology for example Mobile phones etc. While using a mobile phone many people get distracted, means they don't give their 100 percent concentration on driving and miss traffic signals, because they are not really concentrating on driving. The process of dialing or answering the phone can make them lose control of the vehicle as well. According to the research, about 3000 + people died per year in road accidents every year while millions are injured or disabled each year. To solve this type of accident problem we have proposed a system by developing a Smart Accident Detection Device (SADD) which will be helpful for detecting an accident and taking appropriate action on it by sending SMS to the nearest Hospital and Police Station by using the K-NN (K-Nearest Neighbors) Algorithm.

This Smart Accident Detection Device will detect automatically whether the accident happened or not and it also detect its seriousness. Seriousness of accident means that whether there is actually need of Medical assistance or not, because it may happen that a minor accident happened which can be avoidable.

II LITERATURE SURVEY

Several researchers have been introduced in the same field of research as the SADD system. Some of them are as follows.

The authors in [1] implemented auto-detection unit system that immediately notifies an Emergency Contact with the help of GSM and also send location using GPS. GPS will trace the accident place and GSM will send that location to the nearest hospital. It can use GSM modem to send the accident location to the Alert Service Center.

In 2] authors presented a methodology that accelerometer; gyroscope and force sensor measure the behavior of the car and inputs the data to the embedded processor where the signals are processed. The processor then, using the Bluetooth module, sends the calibrated data to the Smartphone. The fuzzy logic decision support – programmed in the mobile application – receives the processed data and makes a decision of detection or no detection. At detection, the Smartphone application, through the data network, sends a text message to a third party (emergency contact/public safety). The text message includes the GPS location, the time and the date of accident.

In the 3] the authors have made an attempt to develop a car accident detection and communication which will inform the hospital system.

III EXISTING SYSTEM

The existing system which is available for detecting the accident is by using Smartphones, which will detect whether the accident happens or not by using sensor which can take action as per their values varies randomly. Smartphone based accident detection application have both advantages and disadvantages. Creating a Smartphone based accident detection system is difficult or complicated, because phones can be dropped and the phones are not directly connected to the vehicle. The drawback of this type of system is that it sends the message to the alert Service Center or Registered mobile number. Then alert Service Center contact nearest hospital by using accident location information. It makes delay.

IV LIMITATION OF EXISTING SYSTEM

- When an accident is detected the alert message sent to the Service Center than they contact with the nearest hospital, it makes delay.
- Relatives of that particular patient didn't get any information about that particular accident.
- Seriousness of accident cannot be determined using current method.
- They don't provide any guarantees that ambulance reach to the exact location where the accident happened.

V PROPOSED SYSTEM

The system consists of an end-to-end smart health application that can be building up from two functional building blocks. Main function of the first building block is to gather all sensory data that are related to the person's information by using the thumb impression, whereas the second block functions are to store. In the proposed system it saves the patient's time and in some accident person body not identified in this situation by using thumb impression we can find out person information. The function working is illustrated as, when the patient's heartbeat rate changes badly, the Arduino which recorded all the patient's information, GSM shield to send an SMS message containing this information, patient ID and the location of the patient which has been taken via GPS shield, to his doctor's mobile phone, who -by his turn send an ambulance to the patient's location.

In this proposed system we are going to implement a Smart Accident Detection Device. It will detect an accident automatically and also its seriousness. Seriousness of accident means that whether there is actually need of Medical assistance or not, because it may happen that a minor accident happened which can be avoidable. Whenever accident happens this Smart Accident Detection Device will provide medical assistance in right time and save the valuable human life. In this Proposed system following concept are going to use.

1. GPS and GSM
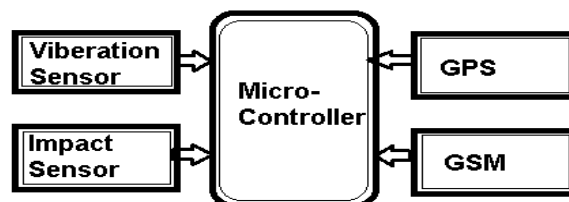2. Vibration Sensor
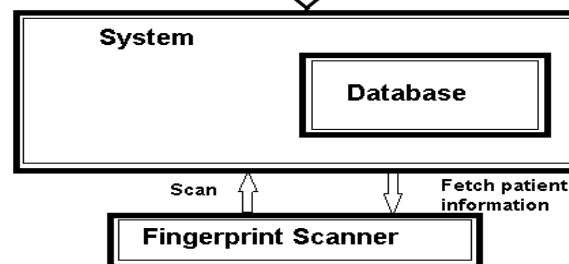3. Impact Sensor
4. Finger Scanner

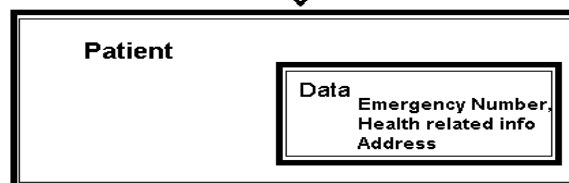
fig a: Vehicle module

fig b: Ambulance Module

fig c: Patient Module

Figure 1: Block Diagram

VI MODULES

Proposed system mainly consists of six modules

Module 1: Hospital

The time between contacting hospital and when the ambulance delivers patient to hospital is very crucial. In many cases the doctors don't know what is wrong with patient till he reaches the hospital or sometimes it happens that when the patient reaches' hospital it is found that some required medicine or tools are not present which are required for treatment. This is very much the scenario in developing countries. This gap in information sharing can sometimes prove to be fatal. In such situations it is better to utilize the time of transportation of patient to gather information about him/her so that the hospital can prepare beforehand for any emergency. The doctors can know exactly what is wrong with the patient while he is being transported and procure any required tools or medicine in that time. Utilizing this gap in exchange of information to do useful tasks can impact lives of many, who might have suffered in case there was delay in communication. In the proposed system we can easily monitor the patient.

Module 2: Fingerprint

A fingerprint in its narrow sense is an impression left by the friction ridges of a human finger. In our system we can use fingerprint for getting person information like name, blood group, previous medical history etc. By using thumb impression, we can get patients information easily.

Module 3: Police

Police get information related to the patient like patient name, I'd and location using this information police easily investigates patient.

Module 4: Registration

In the registration first all doctors, people and patient register to the system.

Module 5: Patient

The Real Time Health Monitoring and Tracking system will help people for critical condition when the person is unconsciousness or any major accident time. The system will track, trace, monitor patients and facilitate taking care of their health; so efficient medical services could be provided at appropriate time.

Module 6: Admin

A registered customer wants to change their account details (email, password, address, update new medical reports, etc.). After first being authenticated by the system, the customer will be presented with a prefilled form with all of their existing information. The customer will make whatever changes he/she wishes to make and submit. The system will validate the information and save it in the database. Admin also control both modules A system administrator wants to manage the garage remotely. After being authenticated by the system, the administrator will give all the information to the doctor as well as police.

VII CONCLUSION

This paper presented a SADD system-an automated system which will detect an accident and sent SMS to the nearest Hospital and Police station. This system provides medical assistance in time and save the valuable human life. This device can be fitted into Vehicles like Bus, Car etc. GPS will provide the exact location of accident so the ambulance can reach to the patient as soon as possible. In this system, we can also get some basic information by scanning the finger of the patient on Finger scanner which will give the basic information which is helpful for the patient treatment. Thus, the proposed system will provide a better solution in case if an accident is detected. The Ambulance tracking system can help in saving many lives. It can also send current location using GPS system to the server database. The server in turn sends location and status information to the doctor.

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