VEHICLE ACCIDENT DETECTING SYSTEM

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ABSTRACT

Nowadays, nobody in this world is ready to look what's happening around them. Even though, if any accident occurs no one cares about it. This is an intention to implement an innovative solution for this problem by developing an Accident detection System using android smart phone from the accident zone. An effective approach for reducing traffic fatalities is: first building automatic traffic accident detection system, second, reducing the time between when an accident occurs and when first emergency respond are dispatched to the scene of the accident. Recent approaches are using built-in vehicle automatic accident detection and notification system. While these approaches work fine, they are expensive, maintenance complex task, and are not available in all cars. On the other hand, the ability to detect traffic accidents using smart phones has only recently become possible because of the advances in the processing power and sensors deployed on smart phones. Most of the smart phone based accident detection systems rely on the high speed of the vehicle (extracted from the smart phone GPS receiver) and the G-Force value (extracted from smart phone accelerometer sensor) to detect an accident. As many references assure that 90% of road-traffic accidents occur at low speed of the vehicle. Hence, in addition to the high speed accident detection, this paper concentrated on low speed car accident detection.

INTRODUCTION

In emergency situations, even a 10 to 12 minutes delay in the arrival of ambulance may mean death! More than 70 times out of 100, calls made by phone, lack to provide exact location. To circumvent this problem we are going to developed an application that will help to reduce response time after accident. It does this by informing nearest available ambulance service with location details and also we have provision to avoid the intimation in case of false alarm. The existing system also uses the external GPS and GSM modules hence increasing the cost of their project. Our system cut the unnecessary cost by using the already existing infrastructure like GPS; GSM built in the users mobile phone.

The main obstacle that encounters the low speed accident is how to differentiate whether the user is inside the vehicle or outside the vehicle, walking or slowly running. The system was practically tested in real simulated environment and achieved quite very good performance results. The most obvious reason for a person's death during accidents is unavailability of the first aid provision, which is due to the delay in the information of the accident being reached to the ambulance or to the hospital. Thus, in the case of incidents involving vehicular accidents, response time is crucial for the timely delivery of emergency medical services to accident victims and is expected to have an impact on fatalities. Moreover, each minute is passed while an injured crash victims do not receive emergency medical care can make a large difference in their survival rate, for example, analysis shows that decreasing accident response time by 1 minute correlates to a six percent difference in the number of lives saved.

Thus, the reduction in response time would occur with widespread implementation of enhanced traffic technologies that are used to reduce the response time and thus reducing traffic fatalities. The early experiences with these technologies are concerned with development Advance traffic management system (ATMS) and development automatic car accident detection and notification system built-in vehicles in United States (U.S). The ATMS is based on traffic sensors that are used to monitor the traffic and detect the accidents. These traffic sensors are installed in main highway; some of them are

installed under the surface of the road such as loop detectors. However, in this system, finding the traffic sensors in every roads process is impossible, since the traffic sensors are installed in main highways only, besides, the installation cost of these sensors are high. Apart from that, these traffic sensors are affected by
the environment. For example some of traffic sensors are not perform well in the snow environment.

Other systems, the automatic accident detection and notification systems are equipped with the most recent manufactures vehicles, 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 cellular to notify the emergency respond. 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 automatic accident detection and notification system, while the installation cost of these system inside the vehicles are expensive. Also, these systems are not considered as a standard option for all vehicles in India and other countries, these systems are just equipped with specific type of the vehicles in U.S such as BMW and GM

These facts are the ones that motivated the researchers to proof the advantages of using the smart phone in development car accident detection and notification systems. The benefits of the smart phone that can be exploited to develop these systems are:

- Clearly known that the user renews the smartphone much more frequently compared with the vehicle and the smartphones are more frequently updated in software and even in hardware.

- Likewise, institution of smartphones gave birth to a lot of innovative technology and exchanging information globally has become more prominent. Smartphones gave a new dimension to the usage of mobile phones for the users

- Regardless, the use of a smartphone gives the possibility of having additional sensors, advance power processor and communication interfaces, which permits to develop traffic accident detection and notification system that predicts when an accident has occurred based on sensor inputs to the smartphone without need to interaction with a car or changing anything in the car.

- On the other hand, the low cost of the smartphones compared to the existing traffic technologies.

- Moreover, smartphones travel with their owners, providing accident detection regardless of whether or not the vehicle is equipped with an accident detection and notification system, and whether there is a traffic sensor installed on the road or not.

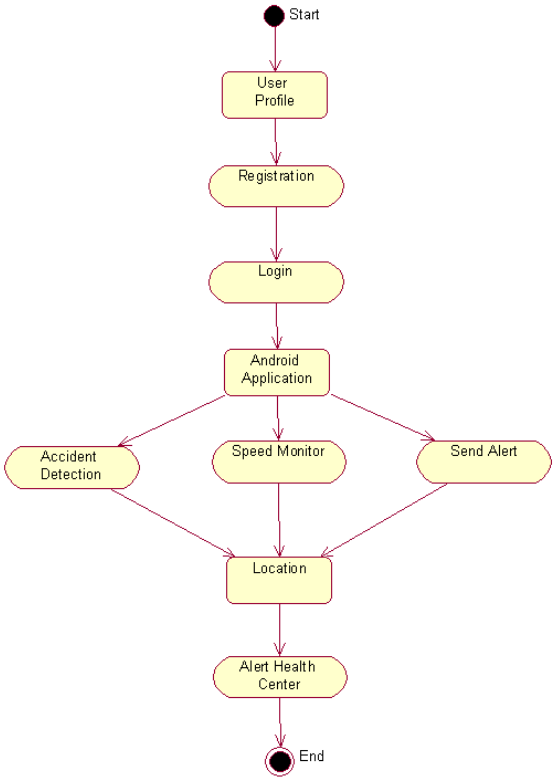
Accident detection is used to prevent an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury and also it is used to detect an event that happens by chance or that is without apparent or deliberate cause. The main purpose of accident detection is used to reduce the death ratio of a human and to provide the maximum assistance while accident occurs.

PROPOSED SYSTEM

The proposed system is mainly for the detection of accident automatically with the help of GPS and accelerometer sensors. For this system Android application for accident integrated with emergency alert via SMS. The system receives the input from the smart phone sensor namely accelerometer, magnetometer and gyroscope. With the help of this application user get aware of road hazard, warnings caused or issued by other vehicles on the road user can cancel the countdown for the false accident detection alarm.

Our motive is to reduce the casualties' inconvenience which is caused after accident. In future multiple system is going to be upgraded with launching its

upgrade version with an aim of only one to detect the accident and to provide help in stipulated time.



EXISTING SYSTEM

There are many solutions proposed for the concerned problem and each one have some advantage over others. Among the other GSM and GPS solutions, some proposed the solution of finding the accident condition using only accelerometer sensor which may be a problem as it may lead to false alarm for some of the cases. Our system uses more than one sensor to increase the accuracy of the system

- Low power hardware components and low cost sensors being used in our system.
- Use of more than one sensor increases the accuracy of our system.
- False alarm switch can avoid any false intimation hence add more towards the reliability

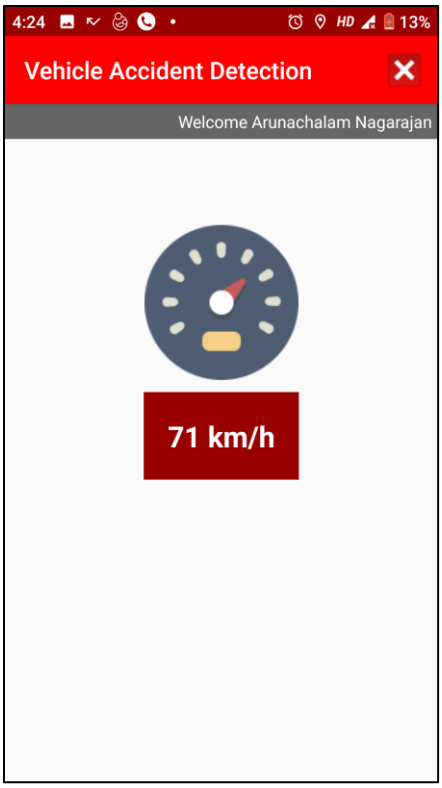
The Accident Detection and Notification System is Implemented to detect an automatic Accident and send notification to the nearest Emergency points. With the help of In-built Accelerometer sensor in Mobile device the system is able to detect an Accident and sends emergency notification with the users location to the nearest emergency points with the help of GPS. The system is composed of two parts. The first part is a Server with the secured access with Login credentials and the second part is the application running on mobile terminals.

The mediator part between the server and the mobile application is the database where the data is saved. All these parts are important and if one of them does not work then all the applications system will be compromised. The mobile phone is communicating through radio signals with a satellite in order to get the location. GPS receiver is able to retrieve location because GPS is more accurate, transmitting to the database the exact coordinates where the user is but if the GPS is not working ,the system will not able to communicate the location even if the automatic detection of the accident is active. The information is transmitted through PHP services to the database.

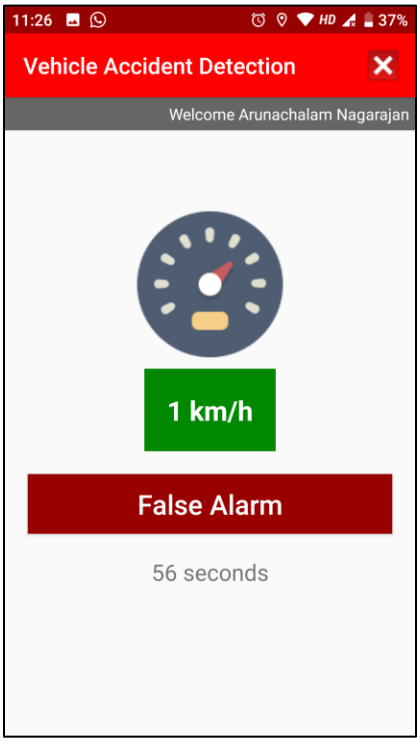
Google Maps API is included in both mobile and server application for showing a route on a map. Using this API nearest hospital and police station will easily found.

OUTPUT IMAGE

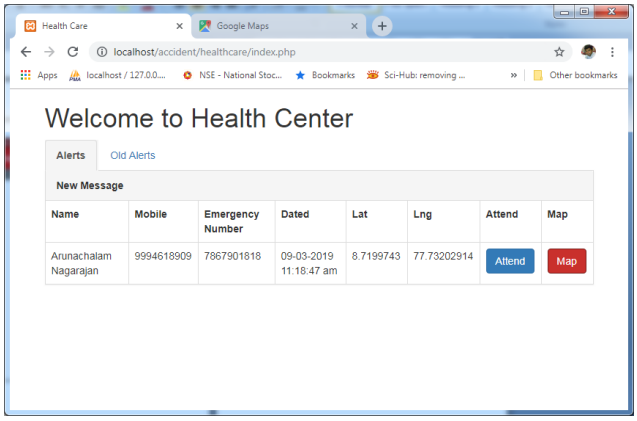
a) registeration



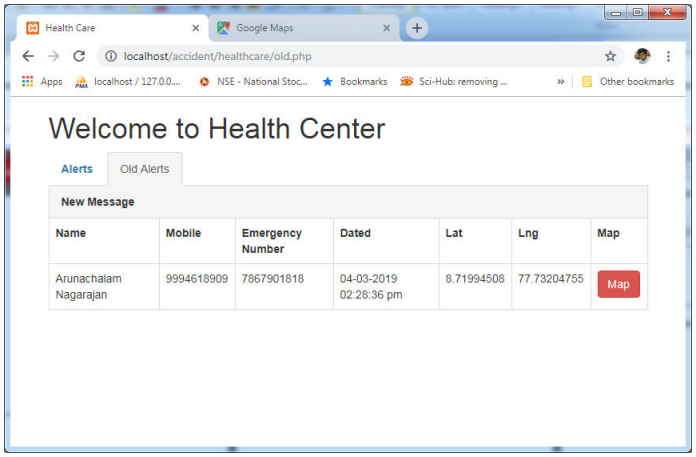
b) home screen



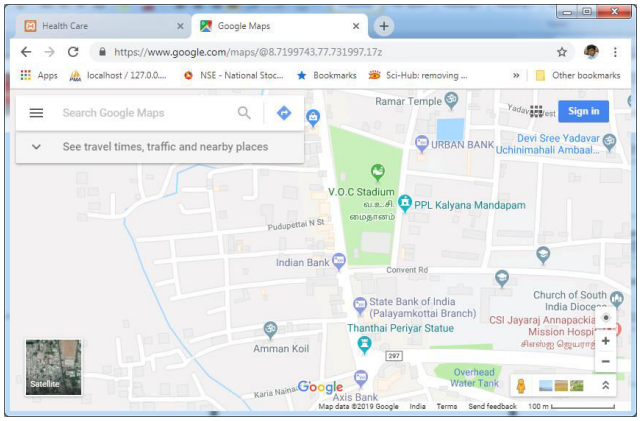
C. False Alarm



D.Health Care Centre Alert



D. New message Alert



F.Location(Map)

CONCLUSION

Accident information would reach the emergency services within seconds. Significantly improves the time gap for rescue operation and save the life of huge number of victims. Victims personal details would be easily obtained

through his registration with this application. Alert messages are send through GPS. Accelerometer and gyroscope is used here in order to detect the plausibility of an accidents.

When the car collides with any object with great impact - In this case the car is travelling with an average speed and then collides with another object with great impact, the resultant output would be that an accident has been detected and the alarm begins to ring for 60 seconds.

If the alarm is turned off before the timer goes off, the traveller is safe and does not need emergency services. Hence the SMS won't be sent to the Health Centre. Otherwise the SMS will be sent to the Emergency Number and Notification to Health Centre services for help.

REFERENCES

[1] Hrishikesh Murkut, Fazal Patil, Vishal Yadav, Meghana Deshpande "Automatic Accident Detection and Rescue with Ambulance", SSRG International Journal of Electronics and Communication Engineering, 2015.

[2] Bruno Fernandes, Arnaldo S. R. Oliveira "Mobile Application for Automatic Accident Detection and Multimodal Alert", research gate may 2015.

[3] Bandari Prachi, Dalvi Kasturi, Chopade Priyanka "Intelligent Accident-Detection and AmbulanceRescue System", International Journal of Scientific & Technology Research, June 2014.

[4] Yong-Kul Ki "Accident Detection System using Image Processing and MDR", International Journal of Computer Science and Network Security, March 2007.

[5] Kaladev P, kokila T, Narmatha S, Janani V, "Accident Detection Using Android Smart Phone", International Journal of Innovative Research in Computer and Communication Engineering, March 2014.

[6] Rahul Gautam, Shubham Choudhary, Surbhi, Inderjeet Kaur, Mamta Bhusry " Cloud BasedAutomatic Accident Detection and Vehicle Management System", International Conference on Science, Technology and Management, 2015.

[7] Hamid M. Ali, Zainab S. Alwan " Car Accident Detection and Notification System Using Smartphone", International Journal of Computer science and Mobile Computing,2015

[8] Chris Thompson, Jules White, Brian Dougherty, Adam Albright, and Douglas C. Schmidt "Using Smartphone to Detect Car Accidents and Provide Situational Awareness to Emergency Responders".

[9] Hamilton Allen Turner, Douglas Schmidt, "WrechWatch: Automatic Traffic Accident Detection and Notification with Smartphones", June 2011.