

INTELLIGENT ACCIDENT ALERT SYSTEM

¹Akshaya G S, ¹Anshad N, ¹Amrutha S, ¹Varsha B J, ²Jithin Jacob,

¹UG Scholar, Department of Computer Science and Engineering,

²Asst. Prof, Department of Computer Science and Engineering,
APJ Abdul Kalam Technological University, Kerala, India

Abstract — Vehicular accidents are one altogether the leading causes of fatalities within the earth. to chop back the fatalities within the casualty scenario the smartphone of the victim is used . During this era smartphones are a component of our life. Smartphone are accustomed automatically detect traffic accidents using sensors and acoustic data , immediately notify a central emergency dispatch server after an accident , and provide situational awareness through VoIP communication channels, GPS coordinates and accident data recording. This also provides the subsequent contributions to the study of detecting traffic accidents via smartphones: (1) an accurate model for accident detection that mixes sensors and context data, (2) shows how smartphone sensors, network connections, and web services is accustomed provide situational awareness to first responds, and (3) provides empirical results demonstrating the efficacy of assorted approaches employed by smartphone, accident detection systems to forestall false positives. Automatic accident detection system is proposed that automatically detects the crash and sends notification through WhatsApp message and broadcast the accident alert notification to the emergency services and anxious dear with precise location.

I. INTRODUCTION

Disaster is cited a sudden event like an accident or a natural catastrophe that causes great damage or loss of life [1]. To facilitate humans with several products, strategies and methodologies Scientists always tried their best As far as there is a priority of the human health issues, many way are carved to accommodate humanity. From emergency actions to a long-time patient care, quick response actions are necessary to avoid many damages happening in human life. In developing countries, many individuals die in road accidents than the opposite reason [2]. The foremost causes don't seem to be just accidents, but unknown crash spots play significant role. Even after a pair of hours of the tragedy, spot cannot be located to start out operation. In consequences, many precious lives cannot save in time. After keeping human life in mind, this work presents an automatic accident detection system which can be a saviour of life. An accident alert system supported user's smartphone is proposed. Most of the people use smartphones during this era. The system has the capabilities to automatically detect an accident and quickly inform to the emergency services or concerned friend with precise location through WhatsApp message and broadcast to person's family and emergency services. Rescue services can send as soon as possible by the contacted ones. Since, there are many occasions on which individuals haven't got any access to any nearby hospital to urge quick medical assistance before the severe loss. Therein situation, system will fulfil the gap between identification and alert. The proposed system consists of software modules. The hardware module relies on the user's smartphone and its sensor. On the selection hand, software part comprises an Android application that's installed on a person's mobile it tracks the accident and alert is send to emergency service.

II. LITERATURE REVIEW

There are many thoughts and ideas behind every product and application which cause new hope for the betterment of individual. Currently, there are few technologies for accidents detection. Most of the systems need a manual operation so the victim of the accident depends on the mercy of others to rush to the hospital. Many times, one accident is unnoticed for hours before help arrives. As a results of these factors, there is a high mortality of the victims of the accident. There are some systems working to facilitate fellow being with some pros and cons. Prachi AI. [3] presented Intelligent Accident-Detection and Ambulance Rescue system prototype that accommodates a sensor, Global Positioning System (GPS), Global System for Mobile (GSM) unit. The system is fitted within the vehicle to detect the accident and sends the accident location to the foremost server unit which houses the database of all the nearby hospitals. The patient is carried to the hospital and simultaneously monitors the vital parameters like temperature and rate and conveys them to the concerned hospital by an ambulance is dispatched to the accident spot . along with this, frequency (RF) communication is used to produce a transparent path for the ambulance. This might minimize the time required by the ambulance to attain the hospital. Although this method is good, but it required complete automation of hospitals and traffic signals that increases the worth and time of deployment. Smart application [4] detects accident automatically using the inner sensors and accelerometer of the smartphone. After accident detection it sends an alert notification with location to preselected contact, therefore the contacted one can send rescue services as soon as possible. This application uses professional and complex algorithms that are developed and tested on real car crash data from the National Highway Traffic Safety Administration [5]. Using these algorithms, it is easy to differentiate the sensitivity of accident whether it's hard, normal and just minor to avoid warning. Kaladeviet AI. [6] proposed Android Smartphone based solution to automatically identify the accident and generate alert with the case of the spot. During this solution, heartbeat sensor is integrated with a Smartphone. Since there's a defined standard of a typical human heartbeat rate (60 to 100 beats per minute BPM). If there's any variation in heartbeat rate relevant to given range the system checks if it's an accident or not. Then the system sends an alert SMS to the preselected contact along with the position of the spot. Actually, in our

opinion, instead of accident detection, it's visiting be used as failure notification. Sane et al. [7] presented a real Time Vehicle Accident Detection and Tracking using GPS and GSM. This method is far different from the rest of the systems because it uses proceed SWITCHES on the front and rear bonnet on the car. As soon as there is a collision with another vehicle, the accident detection unit sends signals to interrupt pins of the microcontroller. A secret's given the system which may be used by the propulsion if there is a minor collision. If the propulsion presses the key, the microcontroller understands that accident isn't serious so don't alert the others. If a collision has been detected and also the key has not been pressed yet, the microcontroller will get the coordinates of this location and may transmit the alert SMS to the family of the actuation through fitted GPS and GSM modules. Anupriya et al. [8] proposed a wise Accident Notification and Collision Avoidance System. During this technique almost the working of the system is same as that of earlier systems [3], [4], [6], [7]. The mortality of human lives is tried to decrease through this method that's an honest step towards human living. During this technique, there are major four units working simultaneously for the detection of the accidents and alert the concerned persons. First one can be a main front unit called the vehicle unit. It includes the sensors, ZigBee, and microcontroller along with GPS to sense the collisions. The foremost function of this unit is to send true of the spot of the accident towards the ZigBee which is ready to relinquish further instructions. Actually, the GPS sends the latitude and longitude to the foremost server if accident takes place. Secondly, the foremost brain of the system takes the position which is known because the control unit. The control unit keeps all the record about the nearby hospitals in his database for the patients of the accidents. It notifies about the accidents and locations through GPS and ZigBee. To support the operation, after getting the notification and also matters of the spot where collision is occurred ambulance unit is to blame of performing operation. The ambulance unit also consists of LM35 temperature sensor and IR based obstacle sensor. LM35 sensor is used for getting the temperature of the patient and obstacle sensor is utilized to measure the heartbeat rate of the patient. Keeping sees able it's prudent to say that almost all the current solutions demand complete information technology infrastructure to utilize. In developing countries, hospitals rescue services and traffic systems aren't automated so it's uphill to deploy existing systems. So, there is a requirement to develop an easy, user-friendly and low-cost automatic accident detection and alert system.

III. PROPOSED SYSTEM

The proposed system is software which is works on the user's smartphone. This may also save the lifetime of the persons who are in an accident. Within the existing system, the accident is detected only the vehicle is experience it but in proposed system the system will alert if the user will encounter an accident.

3.1 HARDWARE COMPONENT

The hardware component of this technique is user mobile and its sensors

3.1.1 SMARTPHONE

The user smartphone with configuration given below:

- with ram 512 and above
- OS android lollipop and above
- Accelerometer

3.2 SOFTWARE COMPONENT

The software component is an Android application that's installed on users mobile. The mobile application gets notification from the hardware part and sends a WhatsApp message and broadcast the precise location of the accident spot to the concerned person and emergency services. App development is finished by Android Studio is that the integrated development environment (IDE) used specifically for mobile application.

3.3 SYSTEM CONFIGURATION

None of the merchandise are often declared as a decent or bad till it's not been tested in several scenarios and conditions that it's developed. To evaluate/demonstrate the performance/working of proposed system, the android application is installed on user mobile. After connection maximize, enter the drive name and get in touch with numbers for alert notification within the mobile application. The subsequent subsections describe the procedure of founded configuration of mobile application and dealing. When the applying is installed within the itinerant and is opened the configuration page of the mobile application would seem. The motive force name and speak to number of persons to whom alert are going to be transmitted just in case of emergency are required to configure mobile application for the primary time then active the appliance.

3.4 Data flow diagram

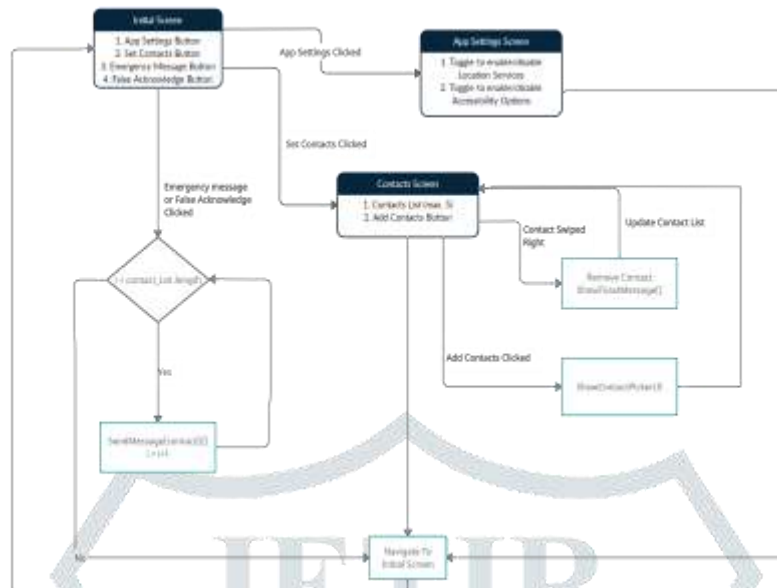


Fig. Data flow diagram

IV. CONCLUSION

An automatic accident detection system is presented to scale back the death casualties caused by the road accidents. The advantage of an automatic accident alert system will be a saviour of life for people who are worried thanks to road crashes. It can play an important role to cut back the death rate in accidents. The proposed system is incredibly user-friendly that even a non-technical person can use it easily. In short, the most benefits of this technique are low cost, secure and straightforward to use. The proposed system based on hardware and software components. The hardware component is an android smartphone. On the opposite hand, a software component is an Android mobile application installed within the driver's smartphone likewise like any somebody having a smartphone has installed with this app. So, just in case of an accident the notification an extended with precise location of accident is automatically sent to concerned relations and rescue service within some seconds.

V. ACKNOWLEDGEMENT

We would wish to thank everyone who had contributed to the successful completion of this project. We would like to express our gratitude to our project guide Mr. Jithin Jacob, Assistant Professor in Computer science and Engineering Department who gave valuable suggestion and guidance for our project. We express our deep-felt gratitude to beloved Dr. Ramani K, Head of the Department for providing necessary information regarding the project and also her support in completing it. We also thank our project co-ordinator, Mr. Jithin Jacob, assistant professor who gave expert supervision, encouragement and constructive criticism amidst his busy schedule throughout the project. We are also grateful to all the authors of books and papers which have been referred to publish this paper.

REFERENCES

- [1] Disaster — Definition of disaster in English by Oxford Dictionaries, 2018. <https://en.oxforddictionaries.com/definition/disaster>. Accessed March 2, 2019.
- [2] Traffic Accidents (Annual 2015-2016), 2017. <http://www.pbs.gov.pk/content/trafficaccidents> annual. Accessed March 2, 2019.
- [3] B. Prachi, D. Kasturi, and C. Priyanka, "Intelligent accident detection and ambulancerescue system", International Journal of Science and Technology, 3(6), pp. 67-70, 2014.
- [4] SoSMart automatic car crash detection app., 2018, <http://www.sosmartapp.com/faq.html>. Accessed March 2, 2019. 56
- [5] National Highway Traffic Safety Administration. [https:// www.nhtsa.gov/](https://www.nhtsa.gov/). Accessed March 2, 2019.

[6] P. Kaladevi, T. Kokila, S. Narmatha, and V. Janani, "Accident Detection Using Android Smart Phone", International Journal of Innov. Res. Comput. Commun.Eng, 2(1), pp. 2367- 2372, 2014.

[7] N. H. Sane, D. S. Patil, S. D. Thakare, and A. V. Rokade, "Real Time Vehicle Accident Detection and Tracking Using GPS and GSM", International Journal on Recent and Innovation Trends in Computing and Communication, 4(4), pp. 479-482, 2016.

[8] V. Anupriya, B. Lissy Roy, V. Dheepthi and F. Masood. "Smart Accident Notification and Collision Avoidance System". International Journal of Engineering Research and Technology, 4(4), pp. 1148-1152, 2015.

[9] A Guide To using IMU (Accelerometer and Gyroscope Devices) in Embedded Applications. http://www.starlino.com/imu_guide.html. Accessed March 2, 2019.

[10] Sun Shenghe, "Development trend of modern sensor", Journal of Electronic Measurement and Instrument, 23(1), pp. 1-10, 200.

[11] Microsoft Visual Studio Community 2017. <https://visualstudio.microsoft.com/licenseterms/> mlt553321/. Accessed March 2, 2019.

