Intelligent Car Accident Detection System

lohsha97@gmail.com

.Dr DINESH KUMAR
Rajarshi Shahu College Of
Engineering
Maharashtra, INDIA
Pune – 411033

ABSTRACT: Whenever accident occurs, the nearby people call the ambulance. The problem related with this is that the victims depend on the mercy of nearby people. There is a chance that there are absence of people near the accident spot or people who are around neglects the accident. This is the flaw in the manual system. So to overcome from this flaw of manual system, we came with an Idea of a system which will detect an Accident and will send the related information of user /driver to the nearby police station, Hospitals and Also to their Relatives.

Our system uses inbuilt sensors in smartphones, i.e., accelerometers. These differences combined with position can determine whether the accident occurred or not, that can provide emergency communication and location tracking services in a remote car that meets an unfortunate accident or any other emergency situation. Instantly after an accident or an emergency, the system either starts automatically or may be triggered manually. It initiates communication and shares critical information like location information, a set of relevant images taken from prefixed angles etc. with appropriate server or authority. Allocation of interactive real-time multimedia communication, real-time location tracking etc. has also been integrated to the proposed system to monitor the exact condition in real-time basis.

Keywords: Location tracking, Android Application, Accident Spot, Alert

I. INTRODUCTION

In recent years road safety is an important area for research and action programmed has received a great deal of scientific attention. Progress has been made on several different fronts but in one area there would appear to be a serious lack of interest or, at the very least, a paucity of published information and informed debate. This area concerns the degree to which our thinking and our solutions are combined into a particular view of technology and society. They are castigated to produce view of technology and society. They are castigated to produce incremental improvements but no excessive alteration in the magnitude or structure of the problem itself. In the case of road safety, it can be argued that solutions which build on the acceptance of life motor car as a major and immutable technology will reinforce that position and generate a primary paradox: solutions designed to reduce a major negative effect of motorized transport contribute to the perpetuation of the circumstances which lead to road traffic accidents. Traffic accidents are a major public issue worldwide. road traffic accident causes the huge number of injuries and death road traffic accident discovers the story of global disaster of road safety. People between the ages of 5 and 29 are second leading cause of death and third leading cause for people between 30 and 44 in road collision. According to statistical projection of traffic fatalities, the two-year comparison of total driver participation in mortal crashes presented a three percent increases.

II. RELATED WORK

(Subha Koley, Prasun Ghosal, 2017) explains that this system is when a vehicle meets an accident the system starts automatically and tracks its location and takes some of its initial photos with the preinstalled cameras and sends them immediately to the emergency control room[1]. The control room system automatically finds the nearest hospital and police station and forwards the message to them. System aims to minimize the damages after a vehicle meets any unfortunate situation like an accident by sending automatic message to the nearest hospital and police station. When a car meets any emergency situation the system starts automatically or manually according to the type of the situation and sends emergency message to the control room. An android app that specifies the location name when the mobile receives GPS data plays a major role in the paper.

(Bannaravuri Amrutha valli, Prathiba Jonnala, 2017)This system has used for accident detection which is about using accelerometer sensor in the vehicle side[2]. And at the receiver side the location of the accident can be known by displaying the

occurrence location name with the newly developed android application. By identifying the changes in the accelerometer sensor tilt the possibility of accident can be known with more accuracy level.

(Jorge Zaldivar, Carlos T. Calafate, Juan Carlos Cano, Pietro Manzoni, 2011) have introduced a systemby combining smartphones with existing vehicles through an appropriate interface we are able to move closer to the smart vehicle paradigm, offering the user new functionalities and services when driving[3]. In this paper we propose an Android based application that monitors the vehicle through an On Board Diagnostics (OBD-II) interface, being able to detect accidents. Our proposed application estimates the G force experienced by the passengers in case of a frontal collision, which is used together with airbag triggers to detect accidents. The application reacts to positive detection by sending details about the accident through either e-mail or SMS to pre-defined destinations, immediately followed by an automatic phone call to the emergency services.

III. PROPOSED FLOW

In the Proposed System, We used hardware component i.e Ultrasonic sensor And Buzzer whenever user enter into car it will notified user to logging into to the system. The proposed System used KNN (k-Nearest Neighbors) algorithm to find nearest hospital and police station. Output is a class membership in KNN classification. An object is classified by a majority vote of its neighbors, object will be assigned to the class most common among its *k* nearest neighbors (*k* is a positive integer, typically small).The object is assigned to the class of that single nearest neighbor, If k=1. Output is the property value for the object in KNN regression. This value is the average of the values of its *k* nearest neighbors. The actual flow of system is explained by using algorithm:

(1) Start Application
(2) Provide Authentication
Input: (User Name, Password)
Output: If (valid user)
Successfully login
Else
Login Failed
(3) Start Driving Mode
(4) System start in background (Motion detection start using accelerometer sensor)
(5) If motion detected then it will consider it as accident.
(6) If user respond to system then it will destroy the alert.
(7) If user not respond then it will consider it as accident & send information to relative, nearest hospital and police station.
Input: (Location (Latitude and Longitude), Image)
Algorithm: KNN
Input: Location (Latitude and Longitude)
Process: KNN will find nearest police station and hospital from database.
Output: Send information.
(8) End

IV. PROPOS...

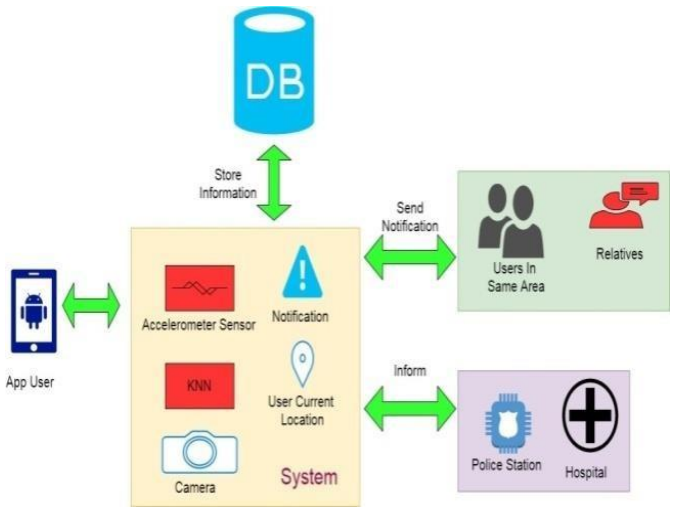

Figure 1: System diagram

In proposed system, our system place user's mobile on desk at the time of driving. Accident is detected with the help of accelerometer sensor. When accident is occurred, it checks accident is occurred or not by sending alert notification to application user. If user responds to system with confirmation that user is ok then system will be in normal mode. If user gives no response or tells that user is not ok then system will take photo from front camera and with current address sends all information to nearest hospital, police station and user relatives.

A. User:
In this module user register into the system. All information(Name, Mobile No., UID No., License No., and Password) of user stored into data based. User places the mobile in car. This application also show accident spots. So user can take precaution about accident.

B. Admin:
After detecting accident, system will alert to user and take the response if user doesn't response to system then system consider that accident actually occurred. System will collect accident spot information(Location, Username)and then stored into database. After collecting data the system search the nearest hospital and police station.

C. Inform nearest hospital and police station:
System at the background searching the nearest location of police and hospital. After searching done system request successfully send to that police station. In this model user current location used to find nearest hospital and police station.

D. Inform to relatives and other user:
After detecting accident system inform to nearest user to avoid the traffic. System also inform to relatives by sending SMS. Relative's mobile number is store at user registration.

Figure 2: Working of ultrasonic sensor

Figure 3: Ultrasonic sensor

Ultrasonic Sensor is used for detecting presence of an object, that object can be user. Ultrasonic sensors are a divided into three categories: transmitters, receivers and transceivers. Ultrasonic Sensors or Ultrasonic transducers are type of acoustic sensor. Transmitters are used to convert electrical signals into ultrasound, receivers can convert ultrasound into electrical signals, and transceivers can both transmit and receive ultrasound.

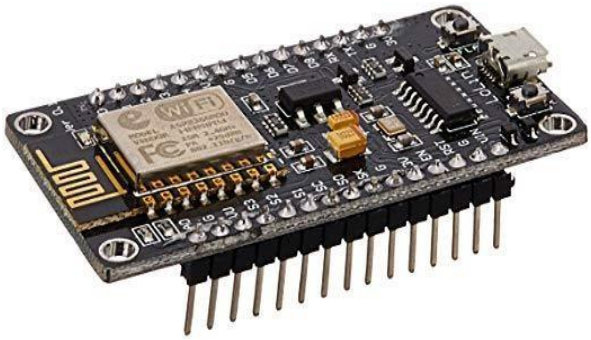

Figure 4: ESP8266 Microcontroller

The ESP8266 is a microcontroller having low cost microchip with full TCP/IP stack and microcontroller capabilitythat allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands.

Figure 5: Buzzer

Buzzer is used to notify the user for logging into the system. A buzzer or beeper is an audio signaling device i.e. Buzzer data to the mobile terminal. Fig. 5 shows the Buzzer.

APPLICATIONS:

Useful for drivers of car/motor vehicles to secure themselves. Health department of government can use this system to survey the number of accidents if deployed in larger scale. It can be used by police to increase speed of complaint registration. Highly useful for traffic estimation.

V. CONCLUSION

Result shows that the application developed is able to correctly fulfill its purpose within a short time period. Overall time required to perform all the tasks, including the delivery of an SMS with the accident details, followed by providing the nearby police station and hospital details and providing them an alert message of the user accident with exact location of user, is taking short time period.

VI. FUTURE WORK

This system can be improved by using gesture input. Also, This system can be interfaced with vehicle airbag and technician.

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