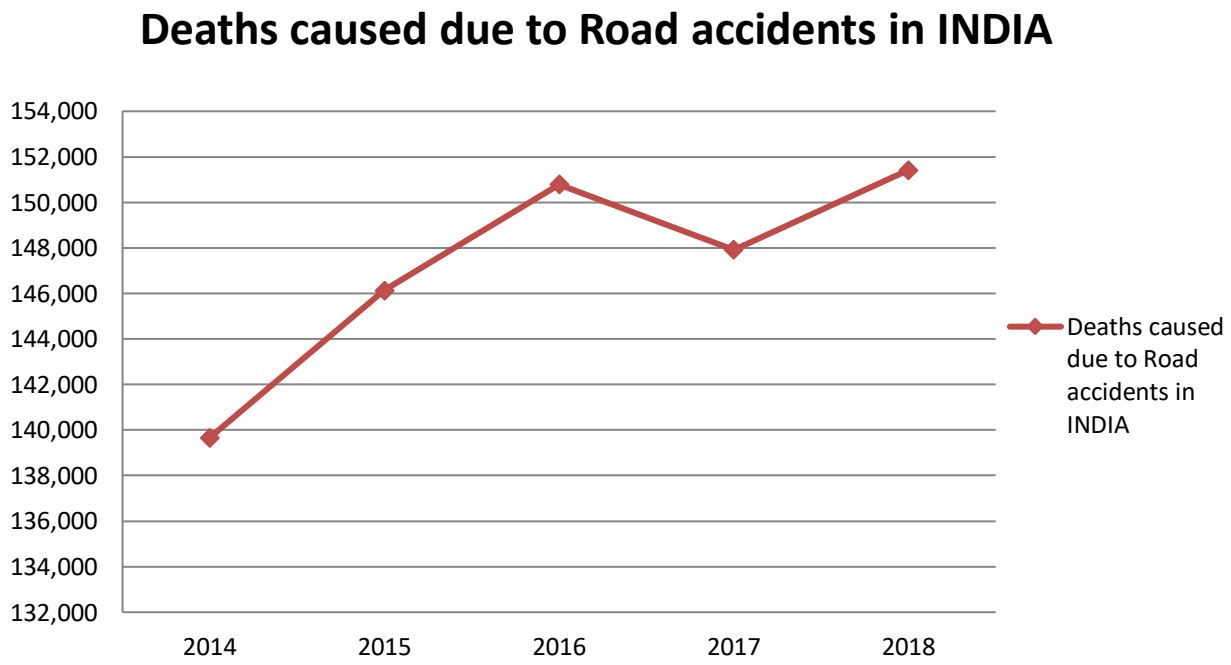
Google Code To Learn Project
Rakshak - By Rupesh

Problem Statement: Deaths due to Road Accidents caused by over speeding and delayed ambulance in India and around the world.

Road Accidents continues to be a major developmental issue, a public health concern and is a leading cause of death and injury across the world, killing more than 1.35 million globally as reported in the Global Status report on Road Safety 2018 with 90% of these casualties taking place in the developing countries and 11% alone being accounted by India. As per the Report on Road accidents in India 2018, the road accident related deaths in India in 2018 were 1, 51,417. Speeding was responsible for over 66% of road accidents in 2018. Unfortunately about 30% of deaths are caused due to delayed ambulance.



In 2016, a total of 4, 80,652 accidents were recorded across India, a survey by the Ministry of Road Transport and Highways (Transport Research Wing) says. These accidents caused 1, 59,785 deaths and injured 4, 94,624 persons. Of them, 4,976 accidents (about 1.2%), were caused by the use of cell phones while driving, resulting in 2,138 deaths and injuring 4,746 people. The minimum speed of vehicles in road accidents is found to be 40Km/hr -- 50Km/hr

Introduction: According to the data given above it is noticeable that major causes of deaths due to road accidents are over speeding, use of cell phone while driving and delay in ambulance to reach the victim.

Rakshak is a multipurpose road safety application. During a Road accident this app informs people who are in a range of 1Km from the road accident spot and gives them exact location of accident and details of victim and his vehicle. So that once other people get notified they can reach the victim or can call the ambulance.

When the vehicle speed exceeds 50Km/hr and it is found that after 3 seconds the vehicle has a speed less than 5Km/hr. This means that after 3 seconds the vehicle has obstructed an object and its speed has been decreased to 5Km/hr or less. The app triggers this event as an accident and then sends a notification to registered people who are in a range of 1Km from the accident spot and message people who are in the emergency contact list given by the user.

This app also promotes Road safety Rules and Helps in communication between the victim and the helper. This app is useful as in many accidents it has been observed that due to delay in ambulance or delayed medication many people lose their life. This app is multipurpose as it helps people to store important documents related to vehicle and open it when required for police verification. In the future by this app we can get accurate data about accidents which would be helpful in research and studies.

The greatest challenge that the app has overcome is using mobile phone as a helping device while driving. People consider mobile phone as a distracting device while driving but it can be made helpful by modern technologies. This app is equipped with modules that do not allow phone calls to happen and when someone calls it mutes the call ring. It is not necessary that the user keeps the phone in his hand for the working of this app. The user can keep the device on deck or in his pocket. Because of Proximity Sensor It avoids unwanted touches.

It has a fully sync able storage to store personal vehicle documents such as Driving licence, RC, etc. While driving the user can park the vehicle and afterwards gets its location in the app. A user can add emergency phone numbers to which messages will be sent when he suffers a road accident.

For Contact and Details about Server: http://coderupesh.000webhostapp.com/

COMPONENT	USE
Label	As an OUTPUT
Button	As an INPUT
Image	As an OUTPUT
ListPicker	As an INPUT
ListView	As an OUTPUT
Notifier	As an Error OUTPUT
PasswordTextBox	As an INPUT
TextBox	As an INPUT
Horizontal & Vertical Arrangement	To make User friendly GUI
ImagePicker	As an INPUT To select Picture.
TextToSpeech	As a Text to speech output
Circle	As a map component
Map	As a map component
Marker	As a map component
Clock	To get current time from device
LocationSensor	To get Location of vehicle
Pedometer	To get distance travelled by the vehicle
ProximitySensor	To know if the device is kept in pockets
PhoneCall	To Call missed call numbers
PhoneNumberPicker	As an INPUT to get phone number.
Texting	To send SMS
TinyDB	To store data locally
FirebaseDB	To store data globally
Web	To get and send request from server(coderupesh.000webhostapp.com) made by me.
ActivityStarter	To open Google Maps
TaifunSettings	To mute call ring when a call comes. Works on android 7 and older. By Taifun link in my website

Screens

Screen1: This is a logo screen and if user is not logined then opens Login Screen otherwise opens Home screen.

Login Screen: It provides the user to login his account in the device. This Screen uses FirebaseDB to get credentials of user and then verifies the user.

Register Screen: It is a registration form where user can create his account by entering his credentials such as Name, Username, Driving lic, State etc. After submitting the form the user is verified by OTP verification. User is also registered on the server side to store the location when needed.

Home Screen: It provides user all the buttons from where he can go to any of the functional screen. It also stores user location when user is on this Screen and GPS is turned on. This is to get accurate data of persons who are nearby the road accident. The server does not track or stores the data of previous locations. This precious location data can be protected by end to end encryption in the future.

Notification Screen: This is a notification screen where all notifications are stored. When someone calls while the user is driving it will try to avoid the call and send a message to the caller and send a notification in the notification screen so that the user may be notified afterwards. It also stores notification if the user is nearby an accident.

Safety Book: This screen promotes Road safety Rules.

Storage: This screen provides user with a fully sync able storage to store personal vehicle documents such as Driving licence, RC, etc. The documents can be seen once they are uploaded in the server.

Vehicles screen: Users can register the different vehicles on this screen by entering credentials such as vehicle brand, number etc. user has to select a vehicle before driving. User can see where the vehicle is parked on this screen after parking in the Drive Screen.

Emergency Phone screen: User can add phone numbers to whom message regarding accident will be sent during a road accident.

Drive: User has to open this screen when he drives. This screen shows information about vehicle name, speed and distance travelled in Kilo metres. It also shows the current location of vehicle in a map. This screen uses proximity sensor so that while driving user can keep his device in pockets and can concentrate on driving. When the user keeps device in his pockets the screen gets black to avoid unwanted touches but the functions in the screen keeps working. User can park his vehicle by clicking on park button and can get its location in the Vehicles Screen. When a call comes while the user is driving the app tries to mute call ring and then send message to the caller that the user is currently driving and to call him later. The phone number of caller is stored in notification. When an accident event has been occurred (discussed in page no. 2) the app sends a notification to registered people who are in a range of 1Km from the accident spot and message people who are in the emergency contact list given by the user.