Car Emergency Response System

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Abstract: *Car emergency response system using IOT is one that deals with responding to emergencies immediately after they have occurred. This proposed system works with the aid of sensors that will send information to the database after they have been triggered. The database will automatically call the hotline numbers saved in the records that will be put on speed dial using GSM module. It will come with an application that will allow people report accidents if they come across one. The application will allow people take a photo of the accident plus put a pin of the location that the accident has occurred. It will have a map module that will show direction to the location of the accident. After the accident has been attended to, it will be shown that it has been attended to. The main reason for this proposed system is to reduce that time people attend to accident which will reduce death caused by accident.*

Keywords: IOT, Sensors, Application, GSM

I. INTRODUCTION

The car emergency system has been developed with the idea of notifying people once an accident has occurred. With the aid of sensors and an application our information will be sent to concerned parties to help the victims of the accident.

The system will help people attend to accident quickly once it's happened, since it will have sensors attached to the vehicle and also people with the application can upload pictures plus the location of the exact accident.

The application will help by reducing deaths caused by road accidents since people or paramedics will be notified quickly about the situation.

There will be use of sensors which will be reading information once the accident has happened. The sensors used will be tilt sensor that will collect information once they have been triggered. A reset button will be applied to show other parties that the accident has been attended to. An Arduino board will connect to the sensors that will be sending information to the computer. A GSM module will also be used to create messages that will have sim card inserted in which will be used for producing the message to contacts. This will be connected to the Arduino. The GPS module will be required for locating the cars position. This will also be connected to the Arduino board. We will also need a power supply to keep the Arduino board on to function while the car is moving.

II. LITERATURE REVIEW

2.1 IOT LITERATURE REVIEW

- Automatic Vehicle Accident Detection and Messaging System by S. Parameswaran, P. Anusuya, M. Dhivya, A. Harshiya Banu and D. Naveen Kumar. Proposed was created in 2020 and works in the following way:The technology development has increased the more traffic hazards and road accident due to lack of emergency facilities. Our paper will provide a solution to this problem. The dangerous driving can be detected using accelerometer in car alarm application. It used as crash or roll over detector vehicle during accident or after accident.

- Real-Time Vehicle Accident Alert System Based on Arduino with SMS Notification by John Michael D. Bautista, Lambert G. Tapic, Guillermo L. Base, Excel V. Cabrera. Proposed system was created in 2019 and works in the following way: Since the development of automobile as a mode of transportation has increased, it has been an important part of our daily lives. However, vehicle-related road accidents worldwide have also

increased. Even with the efforts of government and non-government institutions to at least solve these problems, accident may happen no matter what. Lives could have been saved if the information related to the accident is reported on time. Literature review shows that there has not been a published research and patented device in Asian countries that automatically notifies the police and rescue team if there is an accident.

- Automatic Vehicle Accident Detection and Messaging System Using GSM and GPS Modem by C.Prabha, R.Sunitha and R.Anith. The proposed system was developed in 2021 and works in the following way:The Rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. Our project will provide an optimum solution to this draw back.

- Automatic Vehicle Accident Detection and Rescue System done by B.Sathyasri and Priyanka PareeAlphons. The proposed system works in this way:Now a day, technology rapidly growth, but also people do not survive his/her life after road accident because there is no emergency facilities available in our country. So, we design a technology which facilitates the emergency facilities. This project informs about an accident that is occurred to vehicle to rescue team and the family members of the travelling persons.

- Design and Implementation of Helmet to Track the Accident Zone and Recovery using GPS and GSM by: Muthu Kumar, Suresh, Sindhu I, Gopalakrishna Murthy C.R 1 Professor, Dept. of ECE, KSSEM, Bengaluru, India 2 Professor, Dept. of CSE, Syed Ammal Engineering College, Ramanathapuram, TN, India 3,4,5Assistant Professor, Dept. of ECE, KSSEM, Bengaluru, India. The proposed system works in the following way:As urban living environment is becoming more and more complex; the road condition is becoming worse because of heavy traffic, increase of traffic accidents and high ratio of empty vehicles. It increases the cost of transportation and wastes time of vehicle movement. In highly populated Countries like India, during accidents, people lose their lives due to unavailability of proper medical facilities at the right time. This project senses any accident in the vehicle and intimates pre-programmed numbers like family members of the rider, ambulance, police station and nearest hospital.

2.2 APPLICATION LITERATURE REVIEW

- Emergency Accident Alert Mobile Application created by Aliza Sarian, Wan Fatimah Wan Ahmed and Rohiza Ahmed in 2021. The proposed project works in the following way: Background/Objectives: This paper aims to report on the development of an Emergency Accident Alert mobile application to send an accurate alert and notification of accident to the emergency call centre. Methods/Statistical Analysis: Rapid Application Development strategy is adopted to develop the mobile apps using Phone gap, HTML, CSS, JavaScript and jQuery.

- Android Accident Detection and Alert System created by Andrew Taylor and John Taylor in 2020. The proposed system works in the following manner:Along with increasing demands for automobiles, a drastic increase can be seen in road accidents. As per data given by the WHO (https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries) 1.35 million people die every year due to road accidents. This number is sufficient enough to show the global crises of road safety & creates a need to improve the road safety facilities & rescue operation system.

- Accident Detection and Alert-An Android App developed by A M Chandrashekhar, Monika M, Sushma and Navya Nagaraj: Accidents are the major cause for loss of lives. These may sometimes lead the people for a long-time hospitalization also. In many cases due to late response shown by the people around in the accident location will lead to the death of the victim. This paper presents a realtime solution for this problem by providing an alert system and notification to police and ambulance drivers. This is done by using commonly available electronic devices that are mobile phones to detect the fall.

- Accident Detection and Smart Rescue System using Android Smartphone with Real-Time Location Tracking by Arsalan Khan, Farzana Bibi, Muhammad Dilshad, Salman Ahmed, Zia Ullah Department of Computer Science and Software Engineering Al-hamd Islamic University, Islamabad, Pakistan. This system was

developed in 2020 and is explained below:A large number of deaths are caused by Traffic accidents worldwide. The global crisis of road safety can be seen by observing the significant number of deaths and injuries that are caused by road traffic accidents. In many situations the family members or emergency services are not informed in time. This results in delayed emergency service response time, which can lead to an individual's death or cause severe injury. The purpose of this work is to reduce the response time of emergency services in situations like traffic accidents or other emergencies such as fire, theft/robberies and medical emergencies.

2.3 OBJECTIVES

- Reduce time taken to receive information about an accident.
- Reduce deaths caused by accidents.
- Get informed about an accident by bystanders.
- Give accurate directions to accident area.
- Send messages to emergencies entities containing link to accident point.
- Offer geological link of the accident.

III. METHODOLOGY

In order to work on this project we looked at a different methodologies and picked the agile methodology this is because our project looks at backtracking to previous modules in order to ensure functionality between the first opition module to the last and next module too. This application uses sensors as input for data collection and the Arduino uno r3 is a microcontroller which makes decision to send messages and keep the information.

FIG.1.0 Flow Diagram
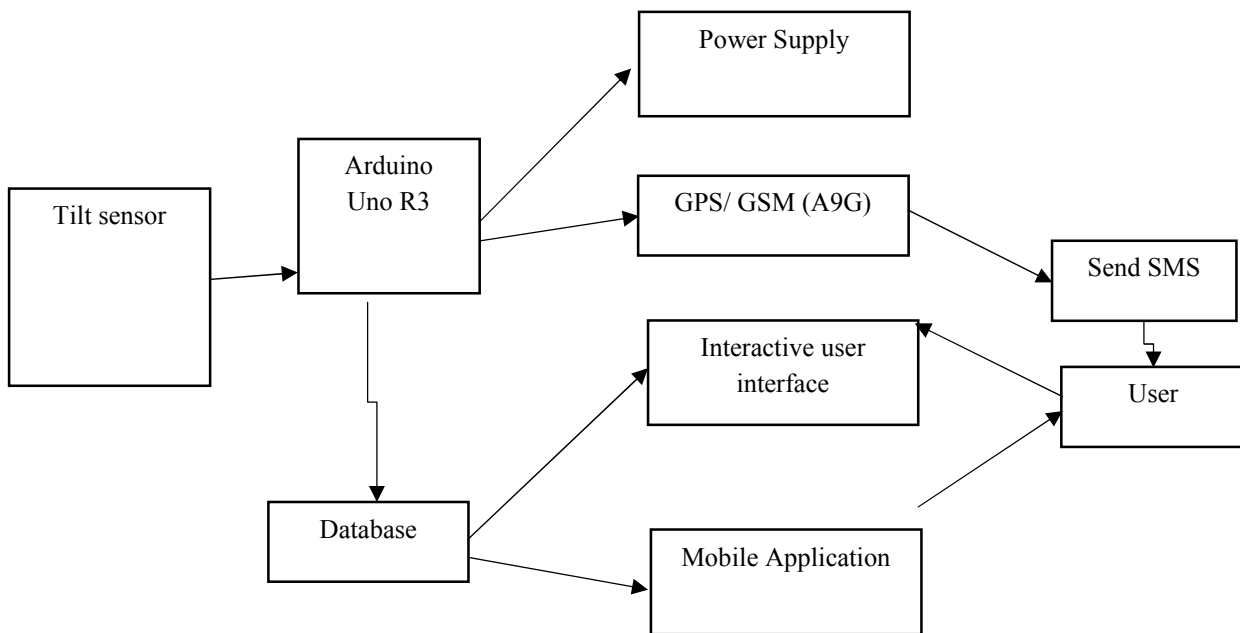
Above is the flow of how data moves around on both the IOT system and application, I will explain these components since they are important modules to understand how they function:

- Tilt Sensor: Collection of emergency data using the tilt sensor attached to the Arduino will be used to collect data from accident events.
- Arduino Uno R3: Data processing will be done here after accident is reported. The event will be saved in the database and message will be sent to the saved rescue numbers. This will be done with communication of the GSM module.

- Gsm/Gps: the message will be sent from theArduino uno r3 containing location and time of event, using GPS and GSM.
- Database: firebase will be used to store information for an event and type of message to be sent.
- Application: this will contain a menu which consists of the modules like gps map, connecting devices, accidents report pages.

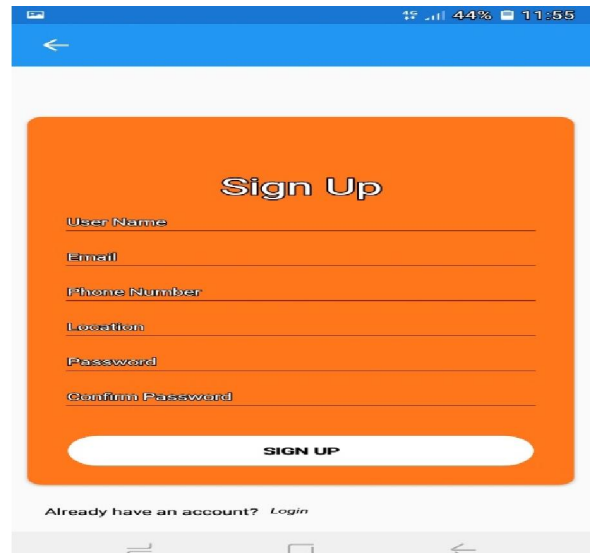FIG.1.1 Screenshots of various modules
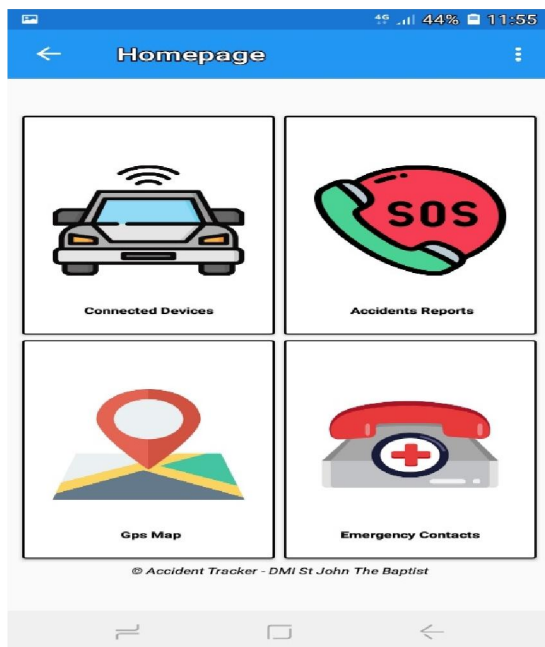

Fig.1.1.1login Page
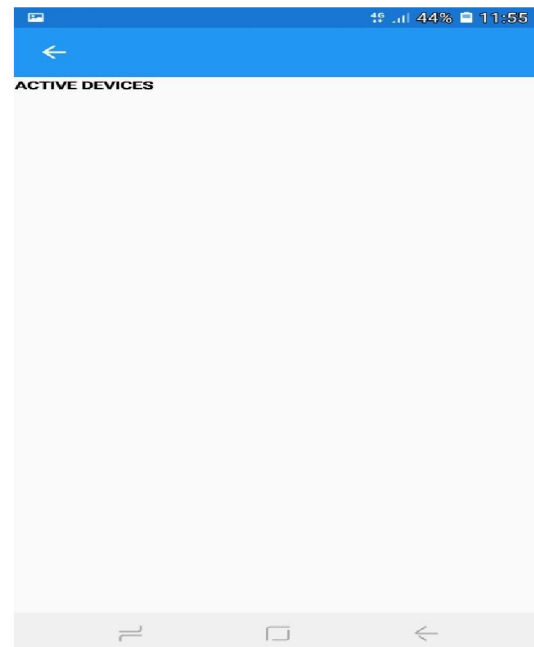

Fig.1.1.2 Sign Up Page

Fig.1.1.3 Landing Page

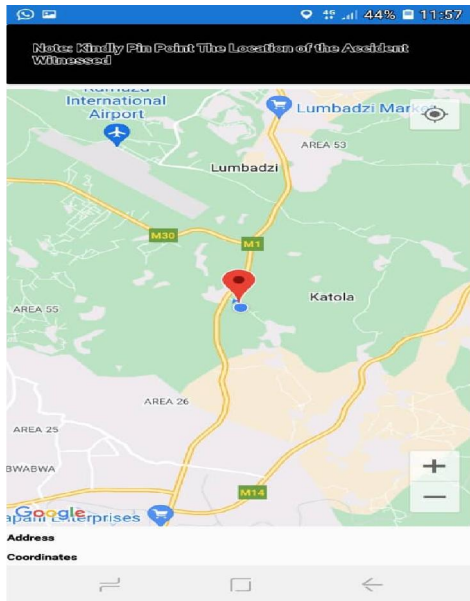Fig.1.1.4 Connected Device Page

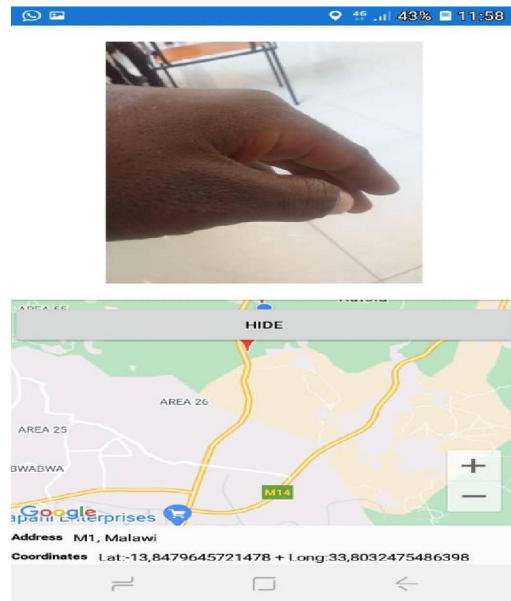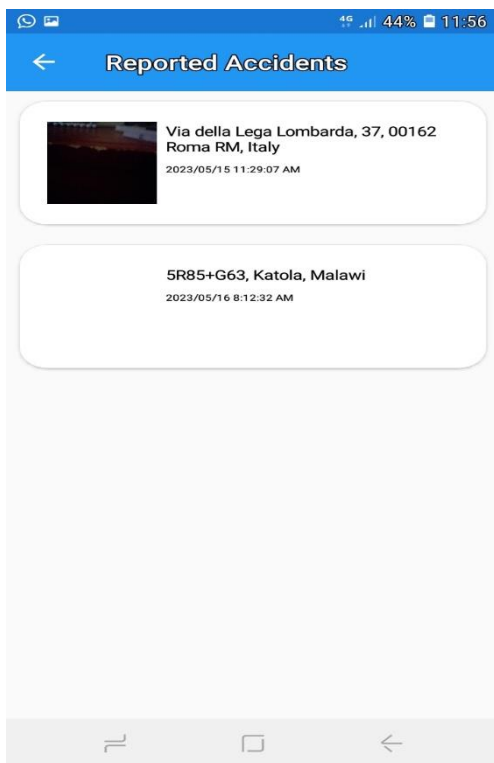Fig.1.1.5 Gps Report Page

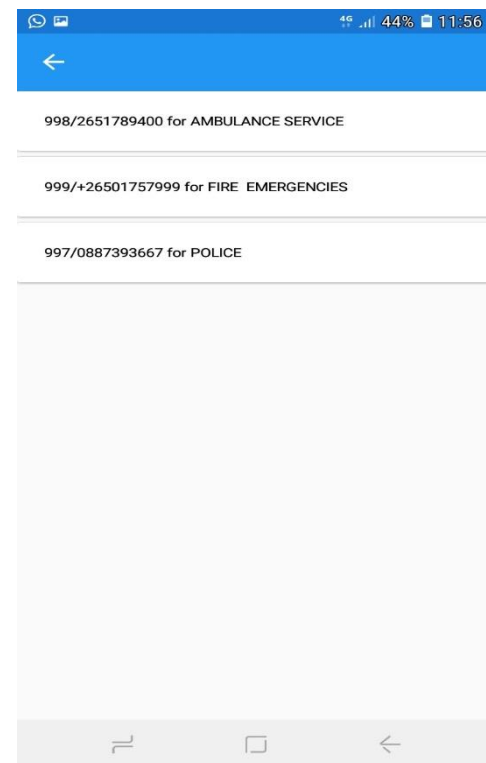Fig.1.1.6 Reporting Message

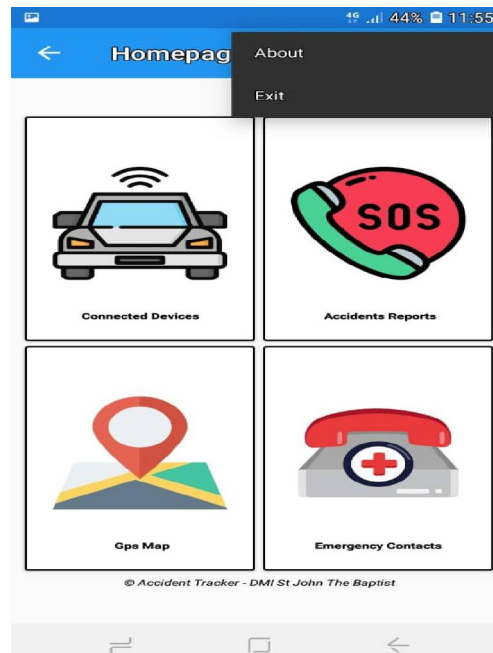Fig.1.1.7 Reported Accidents

Fig.1.1.8 Emergency Contacts

Fig1.1.9 Exiting Page

IV. CONCLUSION

In recent days, the Internet of Things (IOT) has acquired its broad prominence. Thanks to its diverse sources of applications that have paved the way for human beings to live in a smooth, healthy and simpler way. The project we have deployed looks attending to accidents once they have occurred to reduce time wasted.

The Car Emergency System could be a safer system and about two third of the lives from dangerous road accidents could be saved, especially in remote areas where the human activity is less. The GPS tracker attached in the system gives the information of the exact geographical location that could specify the latitude and longitude. The SMS contains the details about the information of occurrence of accident and location of patient by attaching link of registration number of the vehicle. SMS alert is sent immediately to the nearby hospitals, ambulance, police station, also to the family members of the victim. The ambulance could be arrived at the accident spot immediately by using the location details and quick medical help could be provided to the victim. If the victim is not injured severely, then that person can switch off the alert system by pressing a button which is placed in the side of the unit. Thus, a simple way is achieved to reduce the frequency of accidents and immediate alerting system, a low-cost way to safe high-cost lives. As a future works, the method could be devised as a low-cost product and will be installed in all type of vehicles.

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690

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