

MULTIFUNCTIONALITY VEHICLE AND DRIVER SAFETY SYSTEM

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ABSTRACT—In this world, everyone and every industry likes to keep in pace with the advancement in the technology. Automobile industry is also not behind in this aspect. Nowadays almost everyone has a car and bike. As purchasing a vehicle is a big investment, people are really concerned about the advanced technologies in automobile industry. Therefore, automobile companies have witnessed a major boost in their technological aspects by introducing automation in the vehicles to provide user friendly and advance features to their customers. As far as vehicle security is concerned many options are available depending upon the technology being adopted. GSM based vehicle security system is one of the possible technology solutions and it is designed by several groups to identify the vehicle location upon getting it stolen. This system is basically using GSM technology to implement different features in vehicle. With the development and application of many raspberry pi techniques, vehicle security system design analysis is constantly improving. Many new techniques such as Biometric recognition technique, image processing technique, communication technique and so on, in above listed techniques we use Biometric recognition technique or fingerprint technique. System uses Push Button technology to turn on the ignition. An unauthorized person tries to run the vehicle by giving their fingerprint or when they disconnected the sensor wires the GSM module sends the alert message with the current GPS location of the vehicle to the authorized person or owner of the vehicle. When vehicle met accident, the message must be communicated for the registered emergency numbers about accident and location of vehicle. Also when driver releases the handle bar it senses it and slow down the engine speed to prevent from the accident.

I. INTRODUCTION

This paper is about building a prototype of vehicle ignition using fingerprint sensor. This system can prevent the vehicles from being stolen. It is developed to control the ignition of the vehicle through the Push Button. This system consists of GSM SIM 900 that connects to the NodeMcu ESP8266 which is the

microprocessor of the project. To make sure the system is secure, only authorized fingerprint is paired with the microprocessor to start the ignition. Vehicles ignite when the enrolled fingerprint is matched against the fingerprints in the database while users with no match in the database are prevented from igniting the vehicle. A theft alarm from buzzer, a notification to the owner's mobile phone via GSM SIM 900 and status display in the LCD are the appropriate signal to the owner. This article describes briefly in detail about the design and implementation of the ignition system. As more and more people migrate from village to urban area, the urban lifestyle is becoming more complex. The condition of the road is also becoming worse due to heavy traffic and high ratio of vehicles on roads. Every year, more than 1.25 million people are pronounced dead in accident in all over the world. Most of the time, it is realized that one of the major factors of the death is the unavailability of the essential medical services now of emergency situations. In most accidents, people lose their lives due to unavailability of proper medical facility at that time and place. Today, most of the companies keep track of their vehicles and their mechanical conditions using various preinstalled smart sensing system to provide the more profiled services to their precious customers as well as provided an essential smart recommendation that help their customers to drive the vehicle with safety. By using all these preinstalled smart sensing equipment, we extend the safety of the individual by analyzing their position on the go and keep track of the vehicles by sending SMS. The position of the vehicle is sent to registered phone number as a SMS. In case of any accident, our system will sense it and inform passenger's relatives, nearest Police Station and Medical Facility for performing required emergency action. To inform the accident and request for emergency action, GSM technology will be used to provide the essential information to the emergency services. In order to implement this system, an electronic device will be installed in respective vehicle which will track the vehicular GPS information that the Emergency Services will be received when that vehicle would meet an accident. This technology

continuously tracks the vehicle and report whenever is asked and send rescue alert message after any emergency situation such as collision of vehicle take place. For this, we use a microprocessor and serially interfacing it to GSM modem and GPS receiver. GSM Modem sends the position of the driver which is provided by the GPS and the same data is send to the nearest Police Station, Emergency Facilities, and other per-registered Emergency Contacts.

II. ABOUT PROJECT

PROBLEM STATEMENT

The existing lock at the vehicle is not highly secured which consist of handle lock and standard switch lock. Therefore, anyone can break the lock and steal the vehicle and owner will have no idea where his vehicle is. There is a steep rise in the number of accidents and deaths due to accident because of drastic increase in the number of vehicles in last few years. According to W.H.O. (World Health Organization) every year around 1.25 million people loss their priceless lives due to car accident. India alone has 1% of the total roads in the world. But the accident recorded on Indian road are 16% of the world's road accident. There are many possible reasons for these such as drastic increase in the number of vehicles without any increase in the road quality and facilities that is essentially required for it. Another crucial factor that can be analyzed is due to unavailability of medical facilities at right time and at the right place. Most victim loss their lives due to this. The main reason for the proposal of this project is to find a cost- effective, reliable and accurate vehicle tracking device.

LITERATURE REVIEW

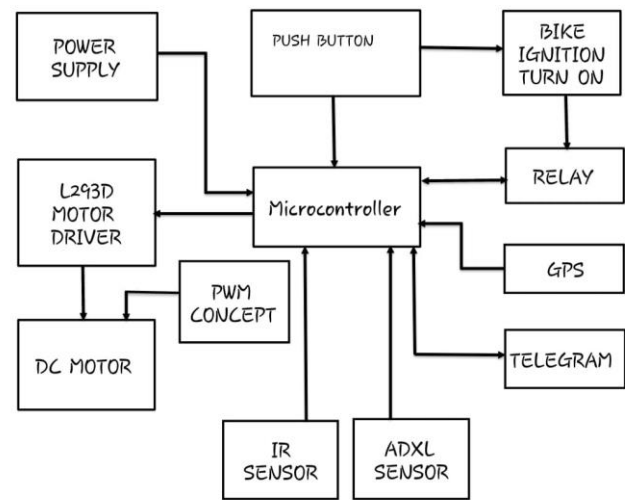
- Literature review reveals that many people worked for the security system of vehicle to avoid theft. Present day technological developments have been studied and tabulated in table below. It was found that people worked for GPRS, GSM, GPS, IOTs & web etc. along with biometric sensing system. All such anti-theft modules are even available in hi-end vehicles. Here us approach is to design a cost-effective anti-theft system for low range vehicles.
- Anti-Theft and Tracking System for Automobiles. In this paper author proposed a productive car security framework is executed for hostile to robbery utilizing an installed framework involved with a Global Positioning System (GPS) and a Global System of Mobile (GSM). By utilizing Google Earth, the customer connects through this framework with vehicles and decides their present areas and status. The position of focused vehicles can be followed by client on Google Earth.

OBEJECTIVES

- This can avoid the vehicle from being stolen.
- Security level of the vehicle ignition is highly protected and could help to decrease theft.
- Using GSM, the location of the vehicle can be monitored.

- In case of accidents the device sends the location address to the emergency contacts.

Block Diagram



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I. PROJECT DESIGN

- **GPS Module** the GPS module has Receiver with antenna which provide the location of the vehicle. The GPS system is commonly used to get information about coordinates, speed, time and distance. In this module, a GPS system is adopted to implement the in-vehicle device.
- **GSM/GPRS Module** It is responsible for establishing connection between vehicle device and remote device for transmitting the message which contains the information about the vehicle location. GSM/GPRS network uses TCP/IP connection.
- **Fingerprint Scanner** It is a type of technology that identifies and authenticates the fingerprint of an individual to grant or deny access to a computer system or to physical facility.
- **ADXL Sensor** It is a small, thin, low power, 3-axis accelerometer with high resolution. It measures the static acceleration of gravity in tilt sensing applications.

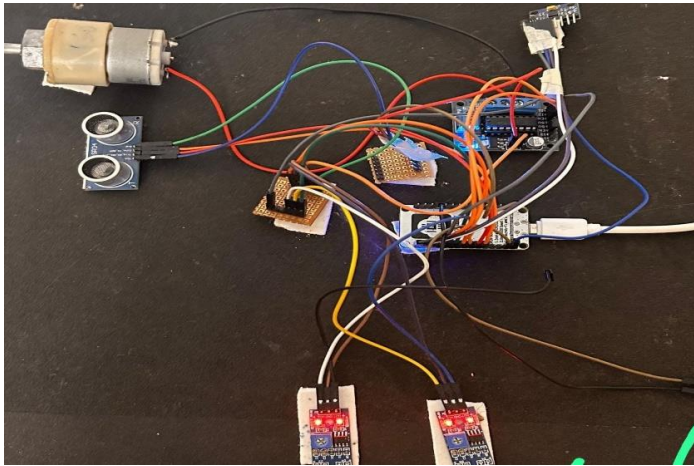
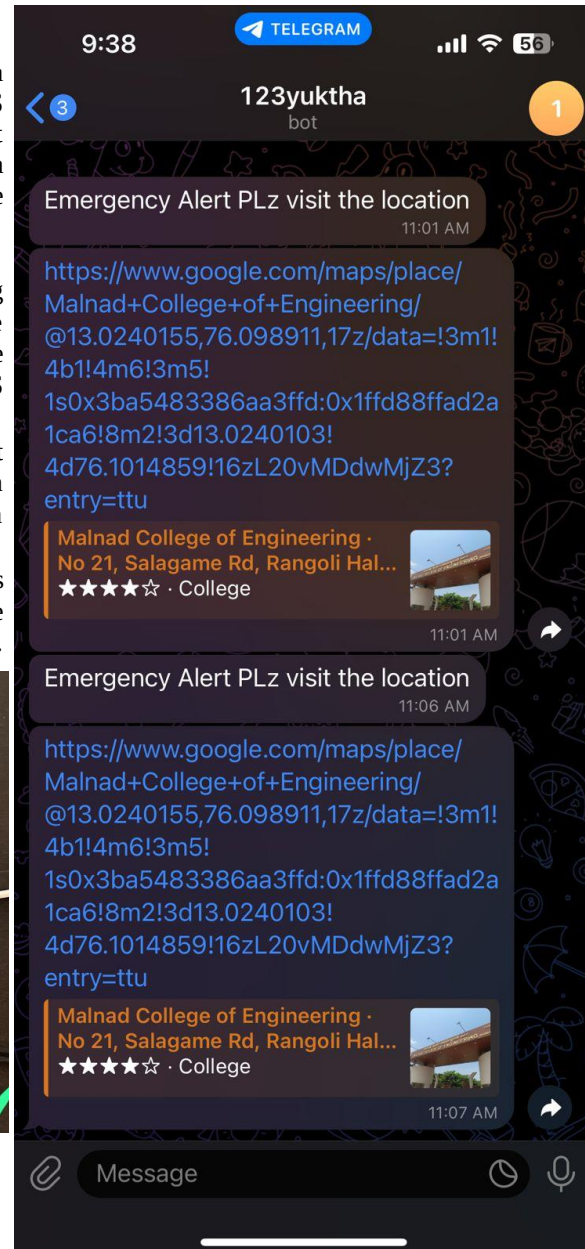


Fig. Overview of the system



CONCLUSION

Despite these few limitations, the contributions brought by this study are noteworthy. Ideally, ADAS are expected to make driving greener, more comfortable and safer. However, their correct use still represents a serious challenge for drivers who already use them and for those who will soon. One reason is the relative low automation degree which necessarily demands active driver implication.

