



MULTIFUNCTIONAL VEHICLE SECURITY SYSTEM

Prof Dr Hemanth Kumar B M¹,

Meghana R², Keerthana³, Dharshini K S⁴, Mohammad Owais⁵

Assistant Professor, Electronics and Communication, Malnad college of engineering, Hassan, India¹

Student, Electronics and Communication, Malnad college of engineering, Hassan, India²⁻⁵

Abstract: In current world situation the security and theft prevention are the main areas. This can be prevented using GSM and GPS technology. This will help in identifying vehicle location when the vehicle is stolen. This GSM uses many new techniques which includes biometric recognition techniques, image processing technique, using with the development and application of raspberry pi technique in this application. This system uses biometric or fingerprint technique in order to on the ignition when the authorized person wants to run the vehicle.

If an unauthorized person tries to run the vehicle by giving their fingerprint or when they disconnect the sensors wires the GSM module sends the alert message with the current location of the vehicle to the authorized person. The another application of this GSM system is that when the vehicle met with an accident, the message must reach to the registered emergency number which will tell extra location and about the accident of the vehicle. The another application is that when the driver was sleepy if he unwantedly remove the hands on the handle bar then it senses and slow down the engine speed to control the speed of the vehicle in order to prevent accident.

Keywords: Raspberry pi, GSM, GPS, ADXL Sensor, DC motor, VNC Viewer.

I. INTRODUCTION

This paper is about building a vehicle many new techniques like fingerprint and so on. This system prevents the car being stolen by the theft. This system consist of fingerprint which is used to control the ignition of the vehicle through the fingerprint scanner. So this system consist of GSM 900, which is connected to the Raspberry pi which acts as the microprocessor of the project.

In order to make sure that the vehicle is secure, only the authorized or owner fingerprint is paired with the microprocessor to start the ignition. The vehicle will ignite when the fingerprint matches with the database of the microprocessor. While the unauthorized user tries to ignite the vehicle which will not match with the database of the microprocessor then it will prevent from igniting the vehicle, where the alert message will be sent to the authorized person using GSM.

In recent automobile industries more and more number of cars are released according to the need of a customer. So every year nearly 1.25 million people are dying due to accident in all over the world this is due to unavailability of the medical emergency nearby. In most accident places people will die because of the improper medical facility at that place. So to overcome this, a preinstalled smart sensing system is installed in the vehicle which will tell about the mechanical conditions services to the customers. So that the customer can drive the vehicle with safety. If any accidents occurs then the extra location and the condition of the vehicle is sent to the emergency numbers via the SMS.

This SMS will send by the GSM modem. This modem will send an SMS to the relatives, nearby police stations and to the medical facility for the proper medical emergency to the passenger. GSM will provide the extra information to the emergency services. Here we use a microprocessor which is serially interfacing the GSM modem and to the GPS receiver. This GSM modem sends the position of the driver that is provided by the GPS and this same data is sent to the nearest police station, Emergency facilities and pre-registered contacts.



II. OBJECTIVES

The objective is to implement the latest fingerprint recognition algorithm to safeguard the vehicle from theft and misuse. Also to locate the accident vehicle at the soonest possible time and rescue the accident victims as well as track the lost vehicle. The system uses biometric technology to make sure that only the authorized vehicle owners with enrolled fingerprints can start the vehicle so that it can avoid theft. The vehicle ignition can be highly protected and could help to decrease theft. Using GPS, the location of the vehicle can be identified where in case of accidents the location address of vehicle is sent to emergency contacts.

III. METHODOLOGY

Existing Method

There are many solutions proposed for the concerned problem and each one have some advantage over others. Presently tracking system is introduced in vehicle to avoid accident and save people's life. They have used microcontroller for this purpose. But the existing systems are available only in high-end vehicles, because the monitoring system is expensive and also the system circuit looks very bulky and not in compact.

Proposed Method

This model consists of a microprocessor, software and hardware components such as:

- 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 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.
- Fingerprint scanner it is 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.

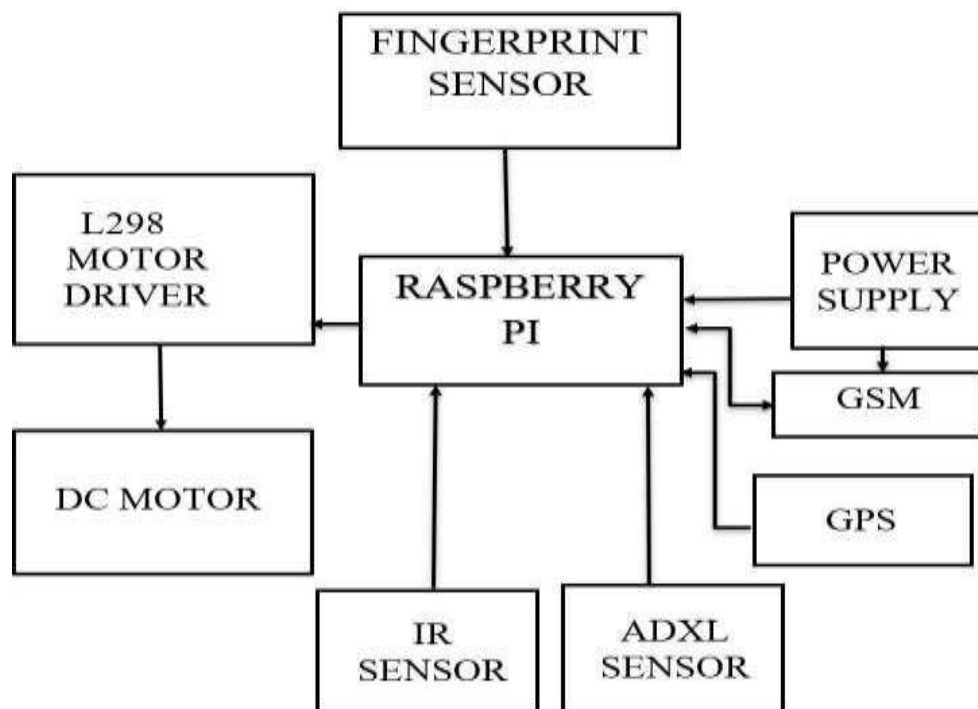


Fig 1: Block diagram of multifunctional vehicle security system



IV. IMPLEMENTATION

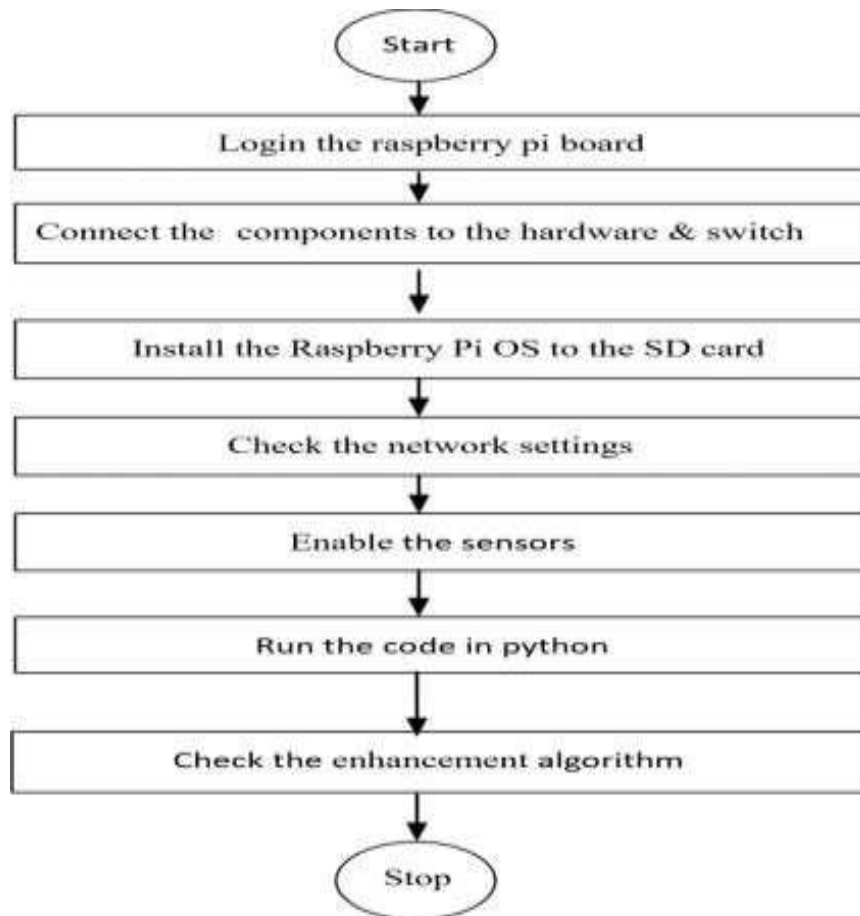


Fig 1.1. Flow chart working process of this module

V. RESULTS ANALYSIS

If accident occurs the alert message and location of the vehicle is sends to the registered mobile number like.

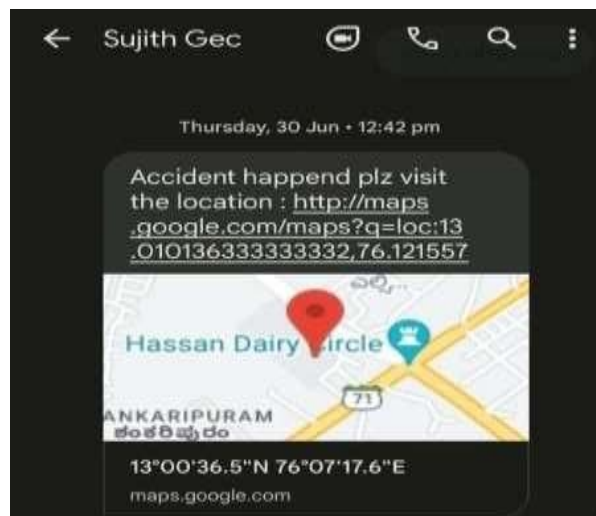


Fig 1.2. Message sent when accident happens



If someone is trying to steal the vehicle by unplugging or cutting the fingerprint wire the alert message and location of the vehicle is sends to the registered mobile number like.

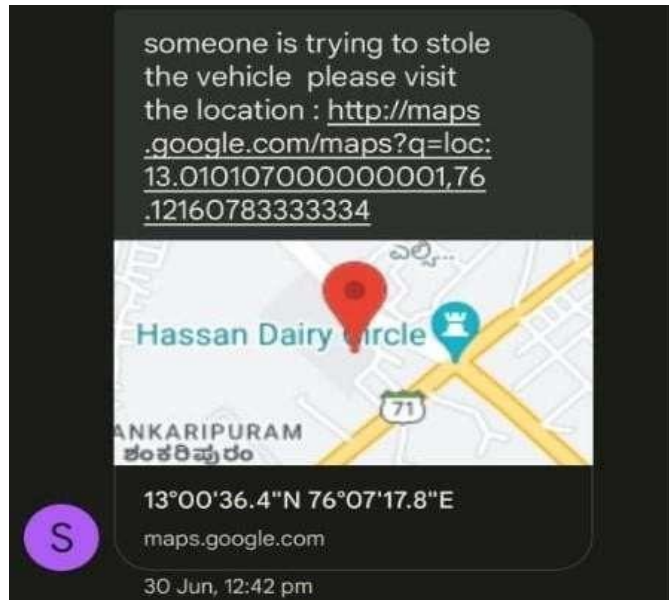
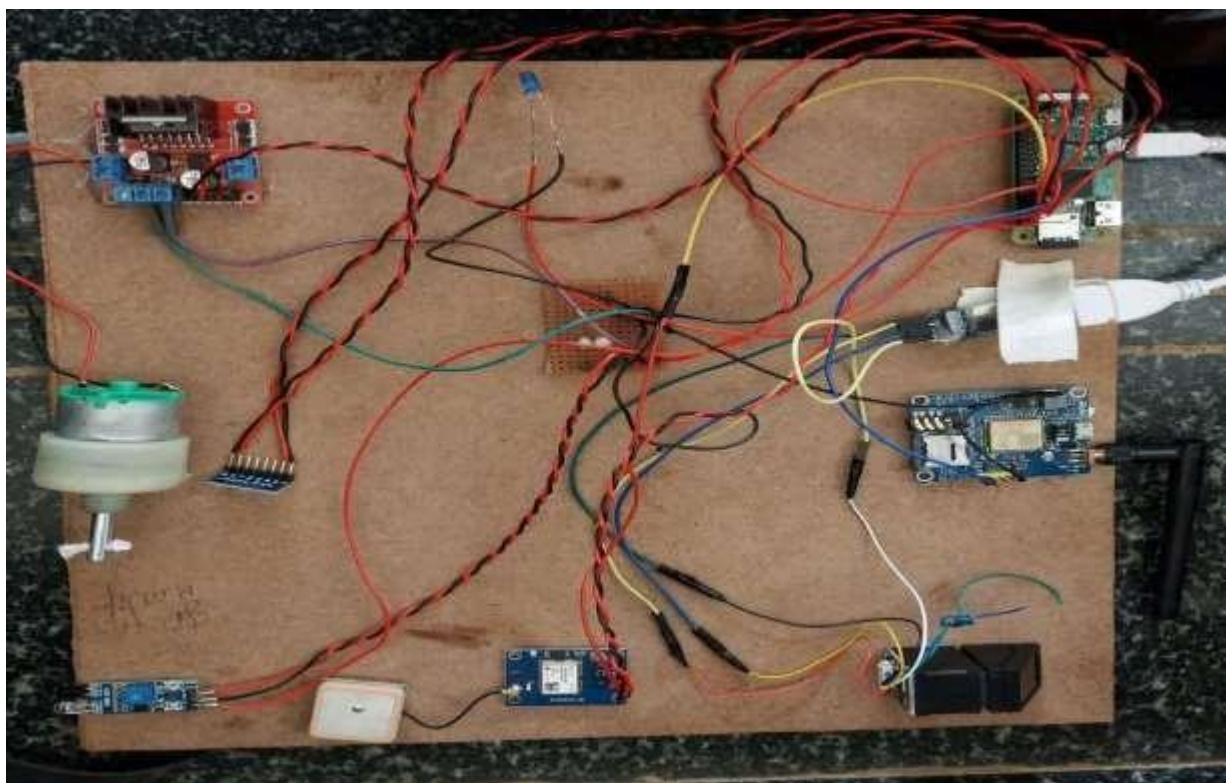


Fig 1.3. Message sent while someone is trying to steal the vehicle The interfacing of hardware components is shown is



**VI. CONCLUSION**

In this paper, a new method for developing a low-cost compact anti-theft system for vehicles is developed and demonstrated. This job poses a real threat to car thieves. Vehicles these days are the least protected from being stolen by thieves. With this task presented in this article, it is very easy to track a vehicle with higher accuracy because it is based on the current very advanced GSM technology. So returning the car is very easy. The essence of the work is that the entire process is performed at the lowest possible cost and is suitable for practical use. There is no doubt that in the future every car will be equipped with this unique kit.

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