DOUBLE VERIFICATION OF ANTI-THEFT ALERTING SYSTEM FOR PERSONAL VEHICLE

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Abstract : This paper focused on preventing vehicle theft by microcontrollers and GSM modules and fingerprint scanner and android application for double security to the vehicle navigation. It can be useful to those people who want improved and more advanced security in their personal vehicle. Now-a-days vehicle tracking system is getting more popularity because of the increasing number of vehicles theft. Vehicle stealing is occurring on parking and driving in unsafe places. The implemented system contains single-board embedded system which is equipped with global system for mobile (GSM) and global positioning system (GPS) along with a microcontroller installed in the vehicle. To track the vehicle and to provide the location information about the vehicles, the GSM and GPS technologies were used. In addition, fingerprint verification is made in the implemented system to make sure the driving of right person.

IndexTerms – GSM, GPS, fingerprint scanner, android application.
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I. INTRODUCTION

Now a days, in our life transportation is very common and also vehicle theft is also become very common, since we need a security to our vehicle. Vehicle burglary is major problem, in order to provide security for vehicles we have many techniques, but each technique contain a few disadvantages. So, to overcome such problems, a system is developed using GPS and GSM technologies. The GPS enable the owner to track the vehicle's location in terms of longitude and latitude; microcontroller receives the location information from the GPS and sends it to the owner in the form of an SMS on GSM modem. Vehicle Tracking is the method used to determine the location of a vehicle using different methods like GSM and GPS module. The systems make use of geographic position as well time detail from the GPS.

A system is designed based upon microcontroller that consists of a GPS and GSM. Automobile manufacturers are incorporating security features into their products by introducing advanced automated technologies to avoid the thefts particularly in case of cars. Security features are provided by Biometric and non-biometric methods. Sometimes security systems fail due to hacked password and encryption of decrypted data, but it is almost impossible to make duplicate of distinctive characteristics. Biometric systems are modern and techniques like fingerprint recognition, iris recognition and facial recognition are becoming popular. Finger print recognition and detection systems are simple to deploy. This method also consists of a finger print verification to vehicle and it is used to avoid the vehicle from being theft. Fingerprints are used to recognize individuals and authenticate their identity and each human being have a unique fingerprint image.

This security system is developed to control the ignition of the vehicle through the Android devices. This system consists of a mobile application on an Android device that will connect wirelessly using Bluetooth to the microcontroller. The microcontroller, in turns is connected to the car ignition system. The function of controlling the vehicle ignition system using mobile Bluetooth and Android application. This technology will help the user to access vehicle from a distance of 10 meters away from the vehicle through Mobile Bluetooth.

II. LITERATURE SURVEY

Vehicle security system has become more popular now a days and commonly used in most cars and automobiles. The vehicle tracking and anti theft system that works only using GSM-GPS and open source technologies which makes it cheapest system for safety and security. The system checks for change in GPS co- ordinates of the vehicle, once the location of vehicle changes, SMS is sent to the owner. The message consists of current GPS Location of vehicle in terms latitude and longitude. The owner can sends a SMS, which instructs the microcontroller to turn OFF the vehicle by switching the relay supply of the battery of the vehicle[1].

Vehicle theft is very common in parking slots and driving in unsafe places. An efficient automotive security system is implemented for anti-theft using an embedded system integrated with Global Positioning System (GPS) and Global System for Mobile Communication (GSM).This proposed work is an attempt to design and develop a smart anti-theft system that uses GPS and GSM system to prevent theft and to determine the exact location of vehicle. The system contains GPS module, GSM modem, Infrared sensors, DTMF decoder IC MT8870DE, 8051 microcontroller, relay switch, vibration sensor, paint spray and high voltage mesh. GPS system track the current location of vehicle, there are two types of tracking used one is online tracking and other is offline tracking. GSM system is also installed in the vehicle for sending the information to the owner of the vehicle because GPS system can only receive the vehicle location information from satellites. In case of accident this system automatically sends the message for help to ones relatives. The preventive measures like engine ignition cutoff, fuel supply cutoff, electric shock system (installed on steering wheel) and paint spray system are installed in the vehicle which is controlled using user or owner GSM mobile. The owner can lock or unlock his/her vehicle with the help of SMS. This complete system is designed taking in consideration the low range vehicles to provide them extreme security[2].
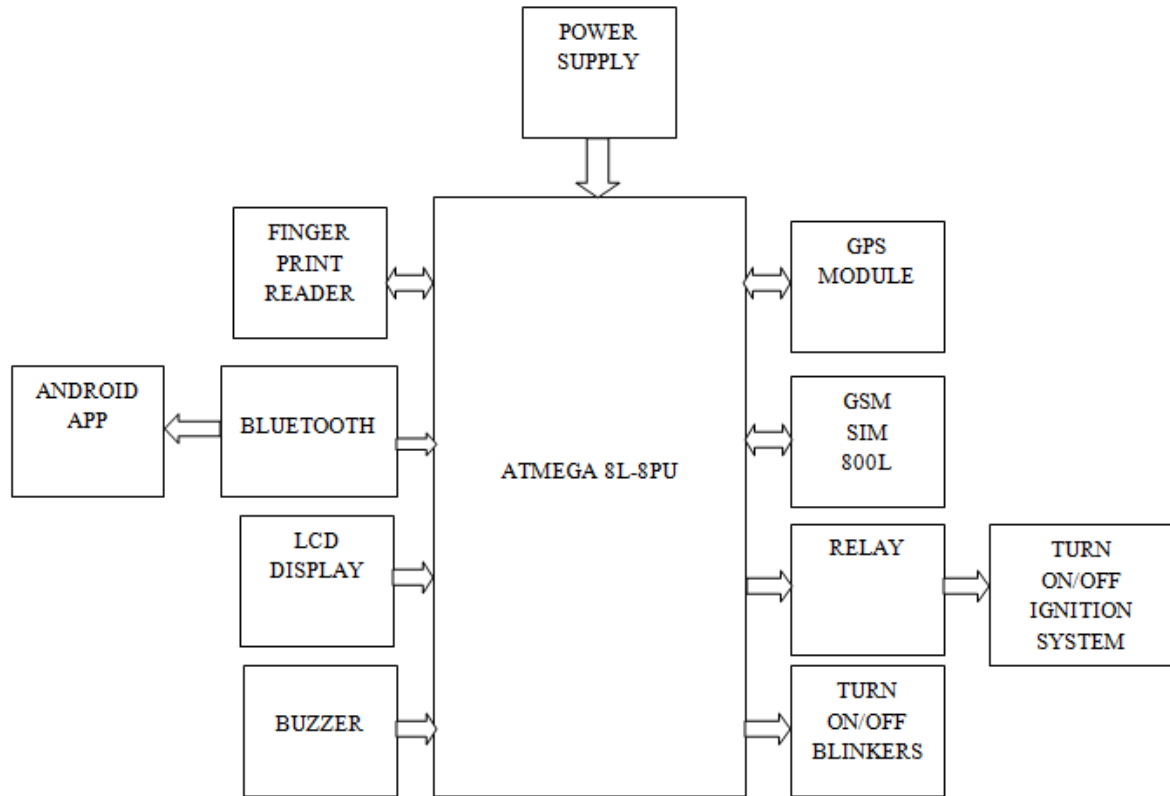
III. METHODOLOGY

Fig 1 : Block Diagram of the Vehicle Tracking System

Owner need to keep thumb on the finger print scanner, the system will scan finger and it will verify with already enrolled image. Also user can enroll the as many number of fingers he or she wants. If the finger print image is matched with the already enrolled one, the ignition system will activated automatically. If the finger print is not valid then vehicle will not start. The system contains the GPS modem it is used to determine the location of the vehicle in terms of latitude and longitude. Microcontroller receives the location information from GPS and sends an SMS to the owner through GSM modem.

The system enables users to switch on/off the ignition of the vehicle by pressing a button in the Android mobile application. To ensure that the system is secure, only Android device that has been paired with Bluetooth using correct pass key will be able to control the ignition system of the vehicle. Vehicle can be locked or unlocked by sending the instruction from user mobile to microcontroller installed in the vehicle.

IV. RESULTS

When ignition systems turn on without authentication the SMS will be sent to the vehicle owner through GSM which is interfaced with the microcontroller. The SMS contains the latitude and longitude values, as shown in the below figure 2.
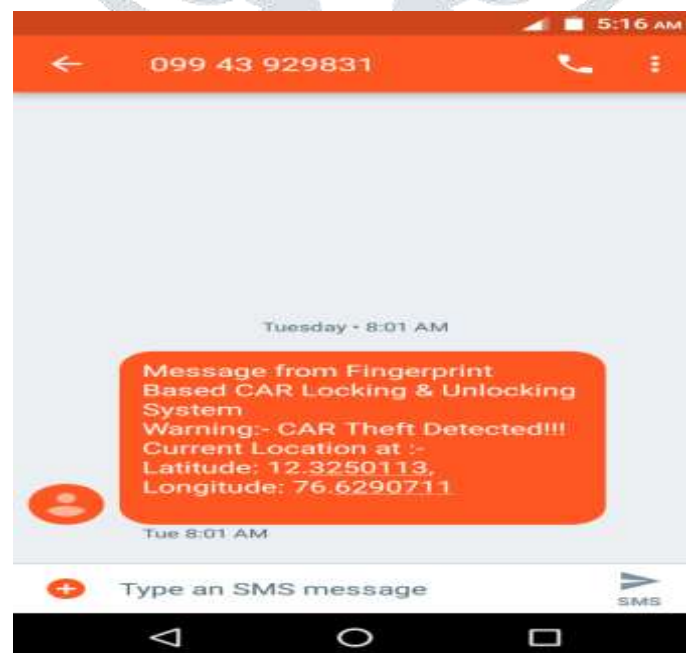

Fig 2: Message from GSM and GPS

From latitude and longitude co-ordinates points we can find the location. The snap shot of location is given below.
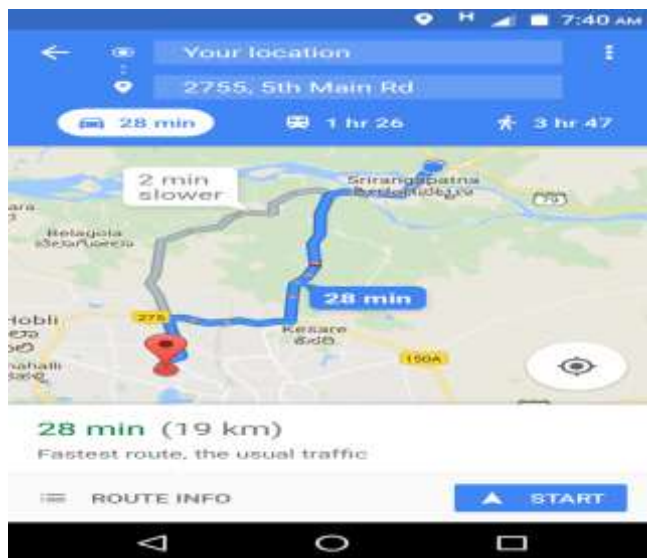
Fig 3: Location on Map

V. CONCLUSION

This system achieves improving the security level and avoiding the vehicle theft. This system is mainly based on the GSM and GPS technologies used to track the location and sending SMS. This vehicle tracking system is suitable for controlling and avoiding the theft with finger print verification. The project is all about avoiding vehicle theft and making vehicle more secure by the use of GPS, GSM technology .

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