ANTI-THEFT PROTECTION OF VEHICLE BY GSM AND GPS WITH FINGERPRINT VERIFICATION

Mittakandala Haseena[1], N.Vinod Kumar[2]

[1] Mittakandala Haseena, MTech, Dr.K.V. Subba Reddy College of Engineering for Women, Dupadu, Kallur,Kurnool, Andra Pradesh, India.

[2] N.Vinod Kumar, MTech, Dr.K.V. Subba Reddy College of Engineering for Women, Dupadu, Kallur,Kurnool, Andra Pradesh, India.

I. ABSTRACT

The main purpose of this project is protecting vehicle from theft. Now a day's vehicle thefts are increasing rapidly. People have started to use the theft control systems installed in their vehicles. The commercially available antitheft vehicular systems are very expensive. So this project is developed as low cost vehicle theft control scheme using finger print sensor.

The Fingerprint sensor captures the fingerprint images, matches the uniqueness of each print read by the sensor and compares it to the one stored in its module or local system database. A vehicle tracking system that works using GPS and GSM technology, which would be the cheapest source of vehicle tracking and it would work as antitheft system. It is an embedded system which is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). This system contains single board embedded system that is equipped with GPS, GSM modems and finger print module along with ARM processor which is installed in the vehicle.

Keywords: Microcontroller, Finger print, GSM and GPS module etc.

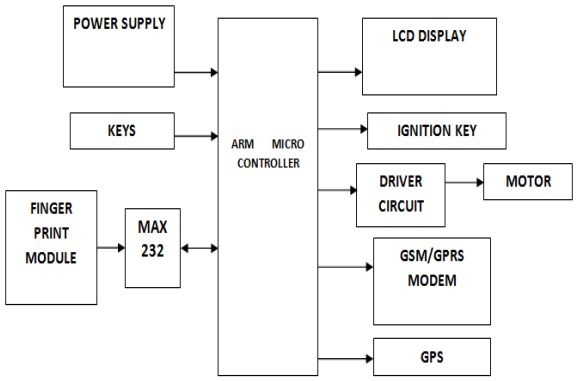
II. INTRODUCTION

Recently vehicle tracking system is getting vast popularity because of the rising number of the stolen vehicles. Vehicle theft is happening on parking and sometimes driving in unsecured places. This project explores how to avoid this kind of stealing and provides more security to the vehicles. The implemented system contains single-board embedded system which is equipped with Global System for Mobile Communication (GSM) and Global Positioning System (GPS) and finger print sensor along with a microcontroller installed in the vehicle.

For ignition of vehicle we have to give authentication using finger print, the image of finger is given to the microcontroller then it will compare with previously stored image in local data base. If image is matched then

microcontroller will activate ignition button. If finger print image is not matched with previous image present in the data base then microcontroller will send message to the owner of the vehicle along with its current location of the vehicle. Also it will generate signal to the buzzer to indicate theft alart.

III. SYSTEM BLOCK DIAGRAM



Fig(3.1) System Block Diagram

IV. SYSTEM OVERVIEW

Microcontroller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

LCD Display: This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

Buzzer Section: This section consists of a Buzzer. The buzzer is used to alert / indicate the completion of process. It is sometimes used to indicate the start of the embedded system by alerting during start-up.

Driver circuit: L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors.

DC Motor: DC motor is an output for this project. And DC motor is connected to microcontroller. And this motor controlled by the microcontroller with the respective inputs given by us. Its speed will be varied according to the speed set by the switches.

Finger Print Recognition: Finger print recognition will be done in module i.e. in module users finger print images are enrolled and even unnecessary finger prints can be deleted also so it has more accessibility in adding new users also.

First the user has to confirm its identification before entering. For user identification finger print sensor is used. The finger print sensor is attached to arm processor. The role of arm processor will be to access the finger print sensor by using its commands. There is Serial Communication between Finger Print Module and MC. The user will first put her/his thumb on

sensor. Matching will be done from sensor data base. If match found then access will be granted, detail of member will be SMS to base station. If user is invalid then also SMS will be sent to base station & access will not be granted. Biometric identification from a print made by an impression of the ridges in the skin of a finger is often used as evidence in criminal investigations. This module can directly interface with any 3.3V or 5V microcontrollers, but a suitable level converter/serial adapter is required for interfacing with the serial port of a Microcontroller.

Keypad: By using this keypad we are using 4 keys for person entry and 4 keys are password purpose and 1 for entry, 1 for exit and last one break.

GPS modem: A GPS modem is used to get the signals and receive the signals from the satellites. In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates; these are represented in form of the latitudes, longitudes and altitudes.

GSM modem Section: This section consists of a GSM modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global System for Mobile Communications is a TDMA based digital wireless network technology that is used for communication between the cellular devices. GSM phones make use of a SIM card to identify the user's account.

V. CONCLUSION

The project titled “Smart Anti-Theft Device for Vehicle Security” is a model for an anti-theft device for four-wheelers. The project is aimed at implementing an anti-theft device with real time tracking and user control. This is achieved with the help of GPS and GSM technology. The project provides an extra layer of security by including biometrics in the form of fingerprint recognition to grant access to the vehicle. To prevent all possible ways of vehicle theft, a sensor which detects the vehicle being dragged has also been included in the project.

VI. REFERENCES

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