ARM7 BASED SMART CAR SECURITY SYSTEM

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I. ABSTRACT

Vehicle theft is one of the major problems faced by civil society today. Statistics shows vehicles which get stolen only 1 by 4th of them recovered. Current systems use key and remote to lock the vehicle. At main locations CCTV camera's are present which are used to locate the stolen vehicle. But at many places CCTV cameras are not present. Control of vehicle and knowledge of their location even after theft can help recovery of the stolen vehicle fast.

With the development and applications of many embedded techniques, car security system design and analysis are constantly improving. Many new techniques, such as face recognition technique, image processing technique, communication technique and so on, have been integrated into car security systems. At the same time, the amount of accident of cars still remains high. So, one practicable car security system should be efficient, robust and reliable. Traditional car security systems rely on many sensors and cost a lot. When one car is really lost, no more feedback could be valid to help people to find it back. We put forward the face detection technique to be applied in car security system because this kind of technique is effective and fast, and one alarm signal could be given to make an alarm.

Keywords: *Microcontroller, Face detection, GSM, GPS, Alcohol sensor, Reflection sensor, camera etc.*

II. INTRODUCTION

In this modern age, there is rapid increase in number of vehicles and so there is the number of car theft attempts. Thus, the protection of vehicles from theft becomes important due to insecure environment.

Face detection techniques have been heavily studied in recent years, and it is an important computer vision problem with applications to surveillance, multimedia processing, and consumer products. Many new face detection techniques have been developed to achieve higher detection rate and faster.

In this proposed embedded car security system, FDS (Face Detection System) is used to detect the face of the driver and compare it with the predefined face. For example, in the night when the car's owner is sleeping and someone theft the car then FDS obtains images by one tiny web camera which can be hidden easily in somewhere in the car. FDS compares the obtained image with the predefined images if the image doesn't match, then the information is sent to the owner through SMS.

III. BLOCK DIAGRAM

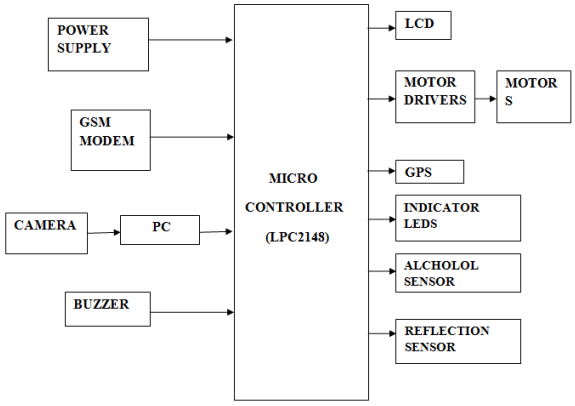

Fig (3.1) System Block Diagram

SYSTEM OVERVIEW

Power Supply: This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

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. The microcontroller is fundamental piece of this undertaking, so we utilized LPC2148 microcontroller for controlling all gadgets. LPC2148 is an ARM7TDMI-S based superior 32-bit RISC Microcontroller with Thumb augmentations 512KB on-chip Flash ROM with In-System Programming (ISP) and In-Application Programming (IAP), 32KB RAM, Vectored Interrupt Controller, Two 10bit ADCs with 14 channels, one with full modem interface.

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.

PC Section: This section basically contains a PC with Serial communication associated hardware. Apart from this, the web cam is also connected to the PC. The serial communication associated hardware circuitry includes the bus (DB 9) connector from PC to Microcontroller.

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.

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.

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.

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.

LED: A light-emitting diode (LED) is a semiconductor light source. LEDs are used as indicator lamps in many devices, and are increasingly used for lightning. Introduced as a practical electronic component in 1962, early LEDs emitted low-intensity red light, but modern versions are available across the visible, ultraviolet and infrared wavelengths, with very high brightness.

Alcohol sensor: Sensitive material of MQ-3 gas sensor is SnO2, which with lower conductivity in clean air. When the target alcohol gas exist, the sensor's conductivity is higher along with the gas concentration rising.

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.

IV. CONCLUSION

From this we implement image-recognition techniques that can provide the important functions required by advanced intelligent Car Security, to avoid vehicle theft and protect the usage of unauthenticated users. Secured and safety environment system for automobile users. We can predict the theft by using this system in our day to day life. This project will help to reduce the complexity and improve security, also much cheaper and 'smarter' than traditional ones.

V. REFERENCES

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