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SECURE DRIVING SYSTEM BASED ON FINGERPRINT DETECTION

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ABSTRACT

In this paper, we proposed a system prevent non-licensees from driving and therefore causing accidents. The Fingerprint authentication method will give the highest level security for the authentication applications. The Bio-metric technology is an ultimate security method due to their uniqueness. The proposed system consists of a smart card capable of storing licensing details of a particular person. While issuing the license, we maintain the database of a specific person. In this system we can process the verification in two categories one with SMART-CARD and other with Fingerprint module. The system consists of SMART CARD which can check whether authorized person or not. The somebody who desire to start the motor vehicle they must show the SMART CARD and After checking the card, then again verify the fingerprint module if the vehicle is matched with database then ignition will on or else off.

Keywords: Microcontroller, SMARTCARD, Fingerprint Module and Reed Sensor

I. INTRODUCTION

Driving without a license is the cause of many accidents. Many who bring vehicles onto the road may not have perfect training how to ride the vehicle and don't even know the road traffic rules. But the misdeeds don't even care for the penalties and the punishment.

A) Person who drives the automobile has not ever received any license from the government

B) Persons who had license a long back, but has been cancelled due to any of his inefficiency and

C) Person who has received only learning license are not eligible to drive the vehicle with any guidance or co-driver.

This shows the incapability of the system in checking the valid documents of the driver who as performed the accident. The survey performed by the AA Foundation for Road Safety Research estimated that in Sweden nearly half of the drivers don't possess a valid license which is the cause for the accident occurrences. Those who are the cause for the accident are mostly drunken people (Goldberg, 1997). Also in Sweden, the cause of 100 deaths and 2500 injuries per year at a cost of more than one billion US dollars is due to unlicensed driving as per estimation. In 1995, in the USA, due to unlicensed drunk drivers more than 10,000 lives were lost in fatal

accidents (approximately a quarter of all road deaths in that year). The equivalent figure would be therefore over 900 deaths if this rate prevailed, in Great Britain. So to prevent those accidents we are providing in-built system in an automobile has therefore became vital. Here we produce a system where it works on bio-metric application(finger print module), by receiving inputs from the user and process that, check whether it is valid or not. If it is a valid then according to that vehicle ignition will be ON.

II. PROPOSED SYSTEM

The proposed system consists of a smart card reader and fingerprint scanner placed in the vehicle itself, the entire system will be processed by a micro-controller. While the user want to drive the vehicle, he/she has to insert the smart card and then fingerprint, when both the details are matched with the existed database, and when the system identified the person is licensed, then the system will check for the seat belt, it checks for the side stand if the vehicle is a two wheeler.The ignition unit of the vehicle is also controlled by the micro-controller, when only all the conditions are satisfied with the user. These methods will improve the security scope and avoids the accident's occurrence due to non-licensees driving.

2.1 Block Diagram

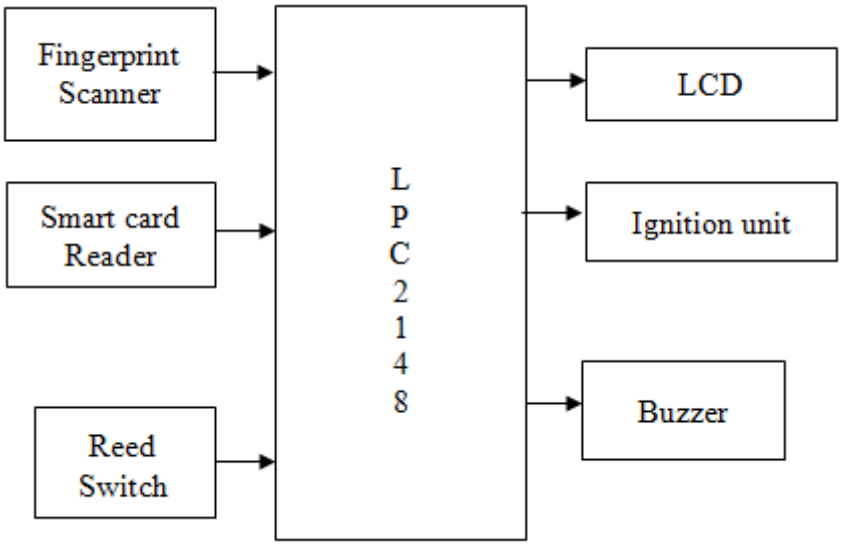

Fig 1: Block Diagram of System Design

2.2 Description

The system entails of a micro-controller, smart card reader, fingerprint device, reed sensor, LCD and buzzer. The controller plays an important role to execute the several tasks. The controller, which we used in this system i.e. LPC2148. It has several inbuilt features such as

1) It is a 16/32 bit micro-controller.

2) It has 512kb of program memory and 8kb to 40kb of data memory.

3) It has 2 UART's which is used to communicate with several devices like SMARTCARD and FINGERPRINT.

4) It also consists of 2 I2C protocols.

5) It delivers 2 SPI protocols.

6) It has 64 GPIO port pins.

7) It has a real time clock to measure the time, date and day in real time manner.

8) It provides ADC, PWM and watchdog timer etc.

9) It also provides two 32 bit timers.

Firstly, we should check the condition, whether the seat belt is wearied or not and after next process authentication verification i.e. Smart Card and Fingerprint. The smart card is used to identify whether the person is licensed or not. If the card is licensed then again check the fingerprint for authentication. If it matches them automatically ignition on or else off.

III. WORKING

The System can provide security for driving peoples by using fingerprint and smart-card. The components utilized in the system are SMART-CARD, micro-controller module, Reed Switch, bio-metric module (fingerprint), ignition system module and the SMART-CARD card which is used to insert into the system by the user. We have to Enrol the fingerprint of specific people in the database. By maintaining a corresponding database, we should compare whether fingerprint is matched or not. if fingerprint match with the inbuilt data, the data pins on the controller would be producing a high logic level as '1' and ideally output about 5volts, when a fingerprint mismatch would be producing the data on the data pins to be at a low logic level and ideally output 0volts..Firstly, we should check the reed sensor is detected or not. It is used to check whether the seat belt is wearied or not. If sensor detected, then again verify the smart card and fingerprint, if matches, then automatic ignition ON or else OFF.

The following flowchart represents the overall programming steps to execute the predefined task.

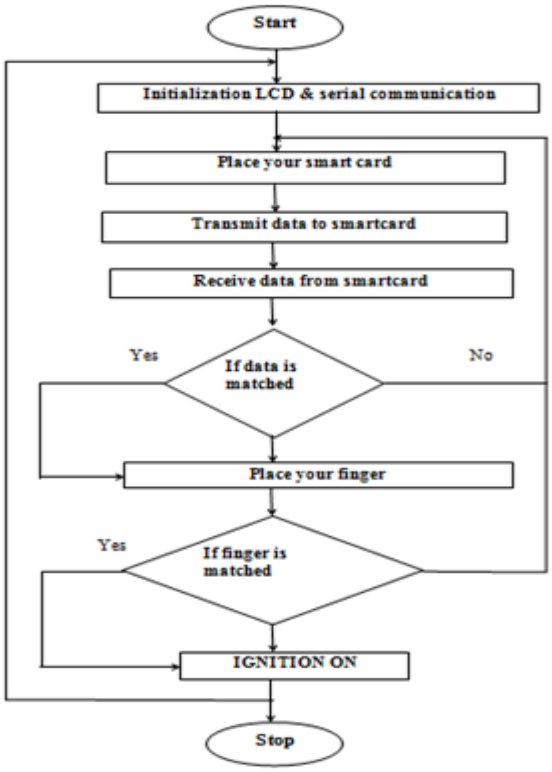

Fig 2: Flow Chart of System Design Model

IV. SOFTWARE IMPLEMENTATION

In order to communicate with the hardware we require a predefined software. An embedded system we require both hardware and software, it is mandatory to perform a specific application. The hardware components will run according to the instruction given to the program. The software, tools should be selected based on micro-controller using in this application. The following some of software tools are used in this project.

1) MDK Keil µVision

2) Flash Magic

4.1 Keil µVision

The Keil µVision is an IDE which will consist of complete programming environment for various micro-controllers. Keil is having a C editor, ANSI C cross compiler, debugger, and a hex file generator in it. It supports programming for various 8-bit, 16-bit and 32-bit micro-controllers.

4.2 Flash Magic

It is simply a programming dumping software. Micro-controllers can only understand machine language. Whatsoever we are text in the program, we need to convert into machine level language. That machine level language format of the program, we call it as Hex file. After completion of writing all the code, the programmer needs to write the hex file into the micro-controller.

V. RESULTS

VI. CONCLUSION

Thus observed above input and output analysis of the proposed system, it proves that the vehicle is surely driven only by the authorized persons. This system also provides facilities and safety for the learner's licensees to drive the vehicle by keeping a licensed person beside. It also provides time for the system to repair if any malfunction exists. In cars, a special feature that it ensures that the seat belt is worn by the driver or not, so that it adds the safety feature two carsThough in implementation of this proposed system, it may take time to perform all the actions, but it would be of a great use for the safety of drivers and irregularities caused unknowingly can be guarded without any loopholes in the system.This prototype module can be interfaced with a GPS / GSM module which would be of great use in future. This data will be used to monitor about the individual who is driving the vehicle, by this way, theft of the vehicles can be minimized so that it would detect the person who is driving the vehicle along with location details with the help of GPS. Further, we can assure the safety of the person with the seat belt detector can be interfaced with the controller as an additional input for ignition control.

REFERENCES

[1] R. C. Simpson, "Smart wheelchairs: A literature review," J. Rehabil. Res. Develop., vol. 42, no. 4, pp. 423–436, 2005.

[2] R. C. Simpson, E. F. LoPresti, and R. A. Cooper, "How many people would benefit from a smartwheelchair?" J. Rehabil. Res. Develop., vol. 45,no. 1, pp. 53–72, 2008.

[3] L. Fehr,W. E. Langbein, and S. B. Skaar, "Adequacy of power wheelchair control interfaces for persons with severe disabilities: A clinical survey,"Development, vol. 37, no. 3, pp. 353–360, 2000.

[4] J.Connell and P.Viola, "Cooperative control of a semi-autonomous mobilerobot," in Proc. IEEE Int. Conf. Robot. Autom., 1990, pp. 1118–1121.

[5] A. Pruski and G. Bourhis, "The VAHM project: A cooperation betweenan autonomous mobile platform and a disabled person," in Proc. IEEEInt. Conf. Robot. Autom., 1992, pp. 268–273.

[6] S. P. Levine, D. A. Bell, L. A. Jaros, R. C. Simpson, Y. Koren, and J. Borenstein, "The NavChair assistive wheelchair navigation system," IEEE Trans. Rehabil. Eng., vol. 7, no. 4, pp. 443–451, 1999.

[7] R. C. Simpson, E. LoPresti, S. Hayashi, I. Nourbakhsh, and D. Miller, "The smart wheelchair component system," J. Rehabil. Res. Develop.,vol. 41, no. 3B, pp. 429–442, 2004.

[8] P. D. Nisbet, "Who's intelligent? Wheelchair, driver or both?" in Proc. IEEE Int. Conf. Control Appl., 2002, pp. 760–765.

[9] G. Bourhis and Y. Agostini, "Man–machine cooperation for the control of an intelligent powered wheelchair," J. Intell. Robot. Syst., vol. 22, no. 3,pp. 269–287, 1998.

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