Fingerprint Based Driving License System

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ABSTRACT: The system consists of a smart card capable of storing the fingerprint of particular person. While issuing the license, the specific persons fingerprint is to be stored in the card. Vehicles such as cars, bikes etc. should have a card reader capable of reading the particular license. The same auto mobile should have the facility of fingerprint reader device. A person, who wishes to drive the vehicle, should insert the card (license) in the vehicle and then swipe his/her finger. If the fingerprint stored in the card and fingerprint swiped in the device matches, system can proceed for ignition, otherwise ignition will not work and warning message will be sent to the owner's mobile. Moreover, the seat belt detector verifies and then prompts the user to wear the seat belt before driving. This increases the security of vehicles and also ensures safe driving by preventing accidents.[2]

KEYWORDS: Fingerprint, Fingerprint reader, Biometric Authentication, License, Ignition system, Smart Card, Safe Driving, GSM.

I.INTRODUCTION

Unlicensed driving involves sympathy toward a few reasons[7]. It is conceivable that drivers who have not experienced proper preparing and testing might be insufficient in some part of the information and aptitudes required to drive securely and proficiently. The term "unlicensed" is utilized reciprocally to mean one of the beneath subcategories, as takes after:
A) Drivers who drive however who have never had any type of permit;
B) Drivers who have already held a permit however who have been precluded; and
C) Drivers having just a temporary permit, however, whom, by and by, drive unaccompanied.

For some unlicensed drivers, requirement and punishments are not solid hindrances and furthermore there are additionally regulatory escape clauses which some exploits. There gives off an impression of being a general laxity in the arrangement of checking the legitimacy of records and their possession – for instance it is asserted to be clear for an unlicensed driver to pass himself off as a companion (with a permit) and later present the companion's archives at a police headquarters. Outline a framework to keep non authorized individual from driving. Principle aphorism behind innovation is creating secure driving framework for client. The client can drive the specific vehicle just when his/her fingerprint matches with the put away one[4]. The real target of the venture is secure driving in:
a) To give efficient driving framework.
b) To give proficient coordinating between sparing fingerprint on savvy card with clients fingerprint.
Section I describes the Literature survey and Section II describes methodology, conclusion in Section III, References in section IV.

II.RELATEDWORK

The motivation of system to provide secure driving system in the society. The system consists of biometric sensor, smart card reader, controller module, seat belt sensing module, ignition system module and the smart card

which is inserted into the system by the user. A fingerprint match causes the data pins to be in a high logic level and ideally output about 5V while a fingerprint mismatch makes the data pins to be in a low logic level and ideally output 0 volts. An interface control circuit was constructed to link the PC parallel port to the ignition system of a vehicle. This circuit provides a high degree of electrical isolation between the PC and the ignition system which operate at different voltage levels, through the use of components called optocouplers. The circuit also provides capabilities for the controlling the ignition system via the interconnection of electronic components such as relays, bipolar junction transistors, resistors and diodes. Three wires from the ignition system of a vehicle are required to be connected to the interface circuit. When the parallel port data pins which form part of the connection to the interface circuit are in a HIGH logic level, the interface circuit is triggered to ignite the vehicle. On the other hand, the vehicle is not ignited when the circuit is in a LOW logic level. The principal components of the prototype system are the fingerprint recognition software and the interfacecontrol circuits which are to form a continuous connection with a vehicle ignition system. From the survey we get information that no of caused accidents by unlicensed person is more than the licensed one. So we proposed the driving system that starts only when the user has license. This system prevents unlicensed person from driving. It also prevents unauthorized access to the system.

III.METHODOLOGY

The proposed system contains five modules:Fingerprint reader, Card Reader, Fingerprint matching, Seatbelt detection, Ignition control. Fingerprint reader is the first step of the system in that scan the users Fingerprint.Card Reader in that user swap his license on card reader and card reader read the fingerprint store on card. Next step is the matching in this system will check the user fingerprint and store fingerprint are matched or not.After matching the fingerprints it will check for seat belt whether user wear a seat belt or not if yes it will start ignition control otherwise it will give alarm to the user to wear seat belt.

1. Algorithm
Following algorithms are used in our system.
Finger Matching Using Biometric Authentication.
Ignition Control Algorithm
1. Get card access from user.
2. If first condition is passed then second condition get access that user scans the fingerprint.
3. High voltage current given to ignition system so that it sparks the fuel and starts the ignition control.
4. Checks for seat belt by checking the key of seat belt is open or close if user forget to wear seat belt then gives buzzer.

2. System Architecture

The basic proposed system architecture is shown indiagrambelow which shows the working of the system in diagrammatic form it includes following blocks:

1. User input

2. Fingerprint reader and card reader.

3. Timer
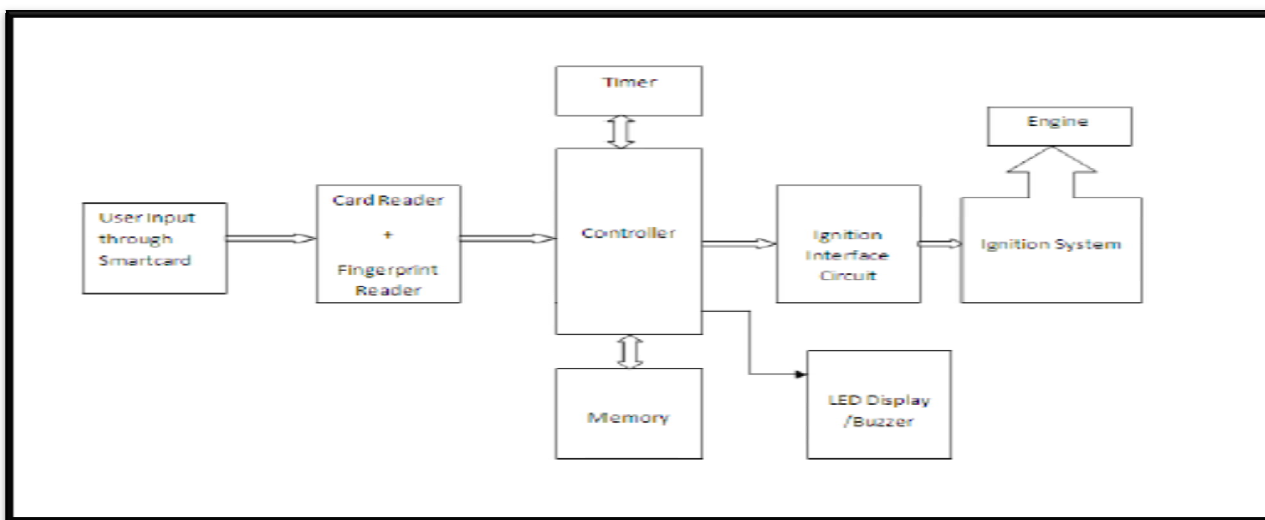
4. Memory

5. Display

6. Ignition system

Figure 1: System Architecture

3. Datasets

Dataset for the system is to give the fingerprint of the user multiple times for getting the accuracy and also swap license of the user to match the fingerprint of the user and store fingerprint on license. This dataset are provide to the system for performing the operations.

Figure 2: Fingerprint Datasets   Figure 3:RFID Card

4. Relevant Mathematics Associated With The System

Let S is the system,
S = {I, O, F, SC, FC}
I = Input
O = Output
F = Functions
SC = Success Condition
FC = Failure Condition
I = {I1, I2, I3}
I1 = Fingerprint input from card
I2 = Scanning of user's fingerprint
I3 = Check the key of seat belt whether it open or close

O = {O1, O2}
O1 = Fingerprint matched message to user
O2 = Ignition system starts
F = {F1, F2}
F1 = Matching of finger print
F1 = {I, O, F, S, F}
I = {I1, I2}
I1 = User swaps the card
I2 = User scans his finger
O = {O1, O2}
O1 = Fingerprint match message
O2 = Unauthorized access
F = {F1}
F1= Matching of both fingerprint by using following steps

Histogram equalization
Binarization
Direction
Region of interest
Thinning
 Matching

SC = Fingerprint matched message blinks on LCD
FC = Unauthorized access message blinks on LCD and also sends message to main owner.
F2 = Ignition control starts
F2 = {I, O, F, SC, FC}
I = Fingerprint matched
O = Ignition control starts
F = {F1, F2}
F1 = Checks the finger print matching algorithm
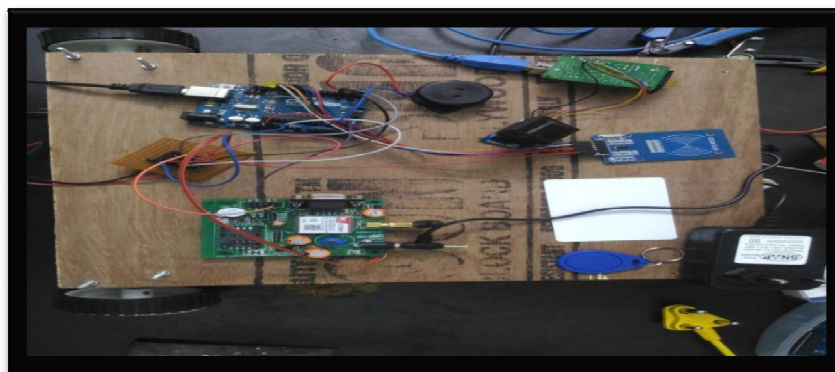F2 = Checks the key of seat belt whether it open or close
SC = Starts the ignition control
FC = Gives alarm for wearing buzzer
SC = Starts ignition control of system
FC = If fingerprint not matched then give error message.
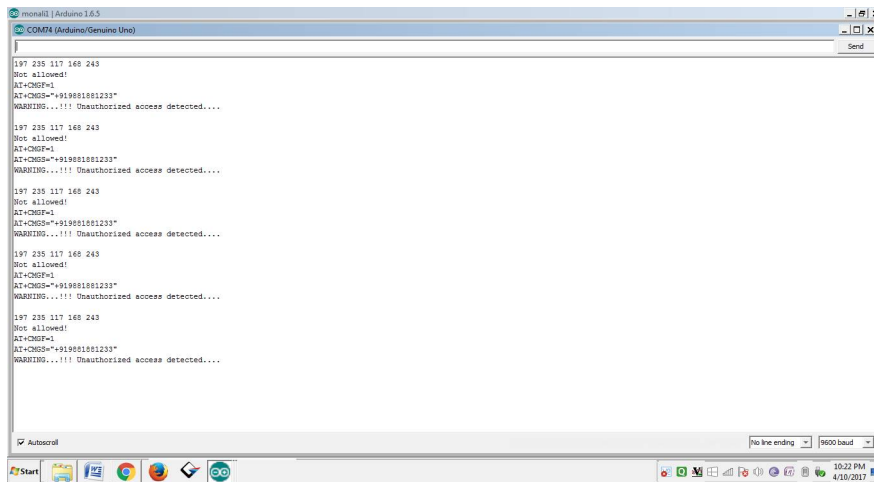
IV.RESULTS

Snapshot 1: Implementation

Authorized user swaps his card and scans his finger. When both the fingerprint matches then user approved to drive vehicle. System display message on screen that "welcome Fingerprint Passed".

Snapshot 2: Unauthorized access

When any unauthorized person tries to access vehicle at that time main owner of vehicle gets message that "Warning...!!Unauthorized access detected. This is done by using GSM module in system.
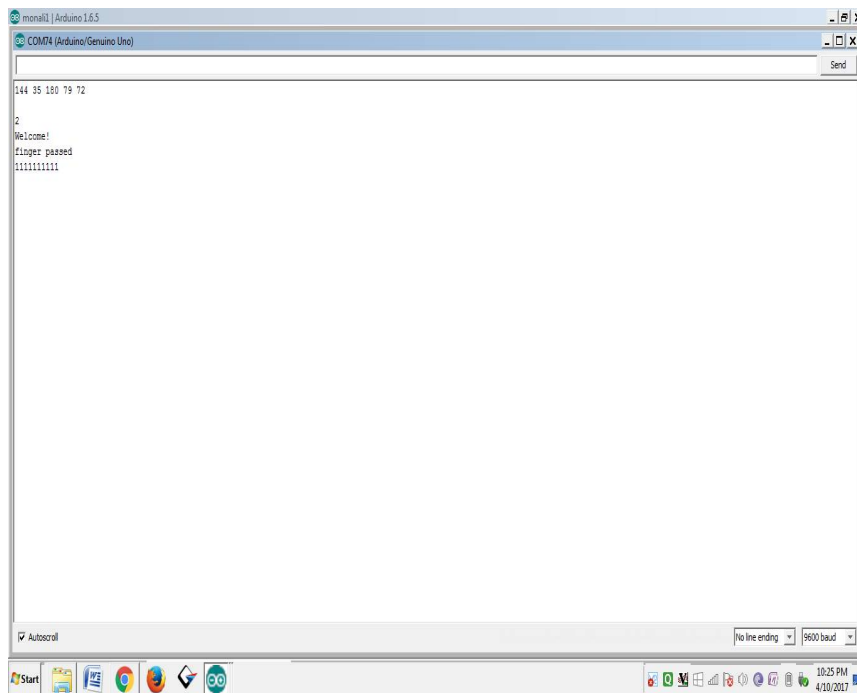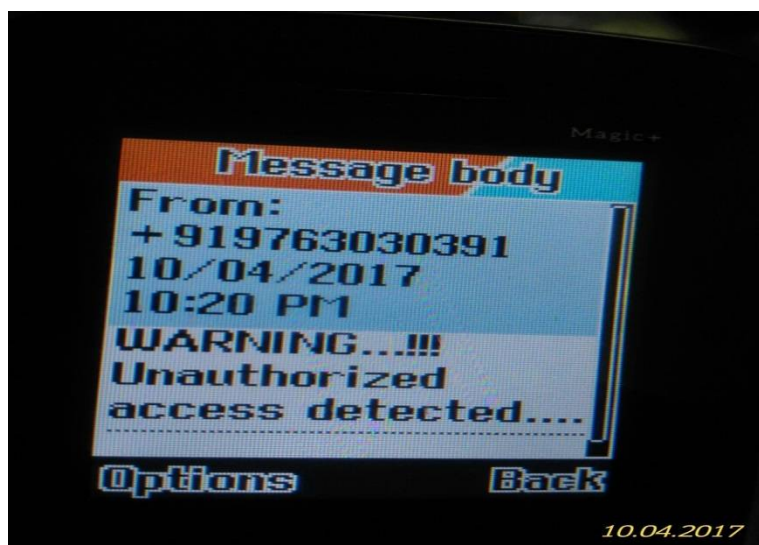

Snapshot 3:Authorized access

Real time demo of how user will get notification of unauthorized access to his vehicle.

Snapshot 4: Warning to the own

V.CONCLUSION

In this proposed system, we shows fingerprint based authentication system for driving vehicle. Additionally we tried to give a brief idea about the how convolution neural network[1] uses for fingerprint liveness detection in real time application[3]. From survey we found that it is a need to develop the authenticated system for driving so that unlicensed person can't access the vehicle so that accidents can be reduced

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