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Smart Driving License Verification System

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Abstract:*The driving license system is very difficult to monitor via old conventional methods. The conventional verification system involves wastage of time and a chance to lead corruption. This project represents a biometric-based System for driving licensing verification. Biometrics is one of the most critical emerging technologies of the 21st century. From the various biometric features, Finger Print is one of the best. To keep the record of attendance report of students has become a very difficult work because sometimes their attendance may be recorded or missed. To deal with this problem i.e. to get the attendances recorded correctly we are using two different technologies viz. embedded system and biometrics. It is a very useful biometric-based driving license monitoring system that is easy and more suitable to monitor. Fingerprint verification is an important biometric technique for human identification. In this project, we represent a prototype automatic license authentication system. It uses fingerprints to verify the identity of an individual. In this project, we use the Fingerprint authentication scheme which is a non-imitable biometric authentication scheme. Using biometric authentication, we can try to avoid the non-licensed person from driving. While issuing the license, the specific person's fingerprint is to be stored on the webserver along with its details. So at anywhere, the person should place on his finger on the fingerprint reader.*

Keywords:*Driving License Verification, Fingerprint, Biometric sensor, License Management, IoT, Embedded System*

I. Introduction

In the 21st century, the world is moving toward digitalization and effective monitoring systems in every sector. But still, people have to carry a Driving License. In today's world, everyone is facing a rush in life. So, it is possible that anyone can forget to carry the Driving License by mistake. Although they have a registered Driving License as they forget to carry it, they have to pay the penalty charges. This is due to the lack of an effective monitoring system. The motivation behind the project is to design a system which will overcome the above-mentioned problem.

Most of the developed and developing countries like India are moving towards a digitalized system from old conventional systems in so many sectors. E.g. According to data from Reserve Bank of India (RBI) and the National Payments Corp. of India, digital transaction volume through various modes has gone up from 796.7 million in October 2016 to 3323.4 million in March 2019. In huge countries like India, there is a need for effective governance and the problem of corruption in many sectors like Road Transport Departments. To overcome this problem of fraud and corruption the traditional system should be replaced by new upcoming technology. So that it will play a major role in decreasing corruption. Monitoring of driving license system is a very hectic task for the RTO. In this project, the biometric of the driver will be scanned and stored. When RTO has to verify the validation of the driving license of the person, it has to just scan his/her biometric. Firstly while discussing biometric we are focusing on fingerprint scanning.

II. Proposed System Methodology

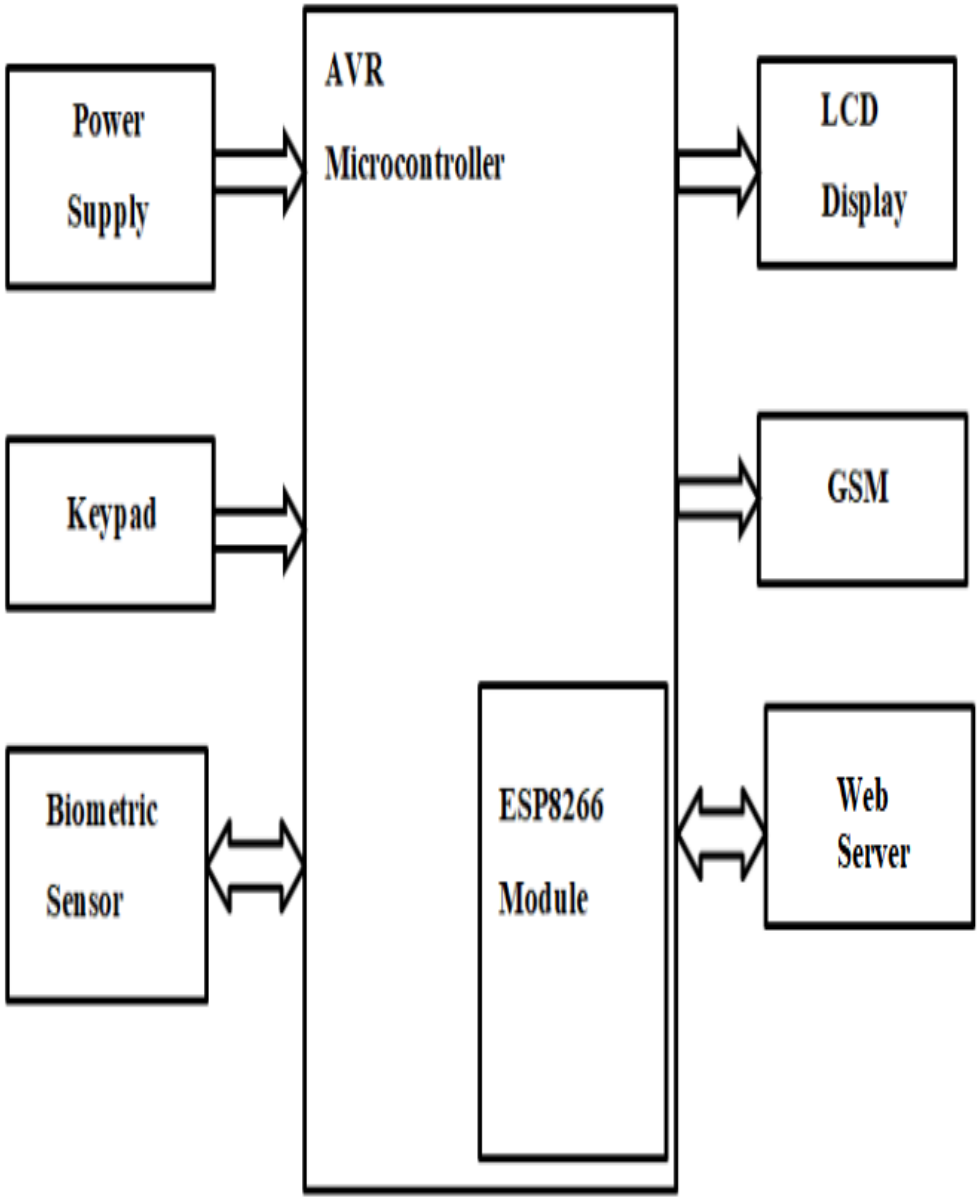


Fig.1: Block Diagram

In this system, we are using the ATmega328 microcontroller of the AVR family. The fingerprint sensor is used for the identification sensor. Each person's license-related data and fingerprints template ID's are stored on the webserver.We use the ESP8266 Wi-Fi module to access the data which is store on the cloud/ webserver. ATmega328P is interfaced with keypad, GSM, a biometric sensor, LCD. LCD is used to display the output after validating the person. GSM is used to send the required messages. The output of the proposed prototype depends on the fingerprint of the driver and the data on the webserver.

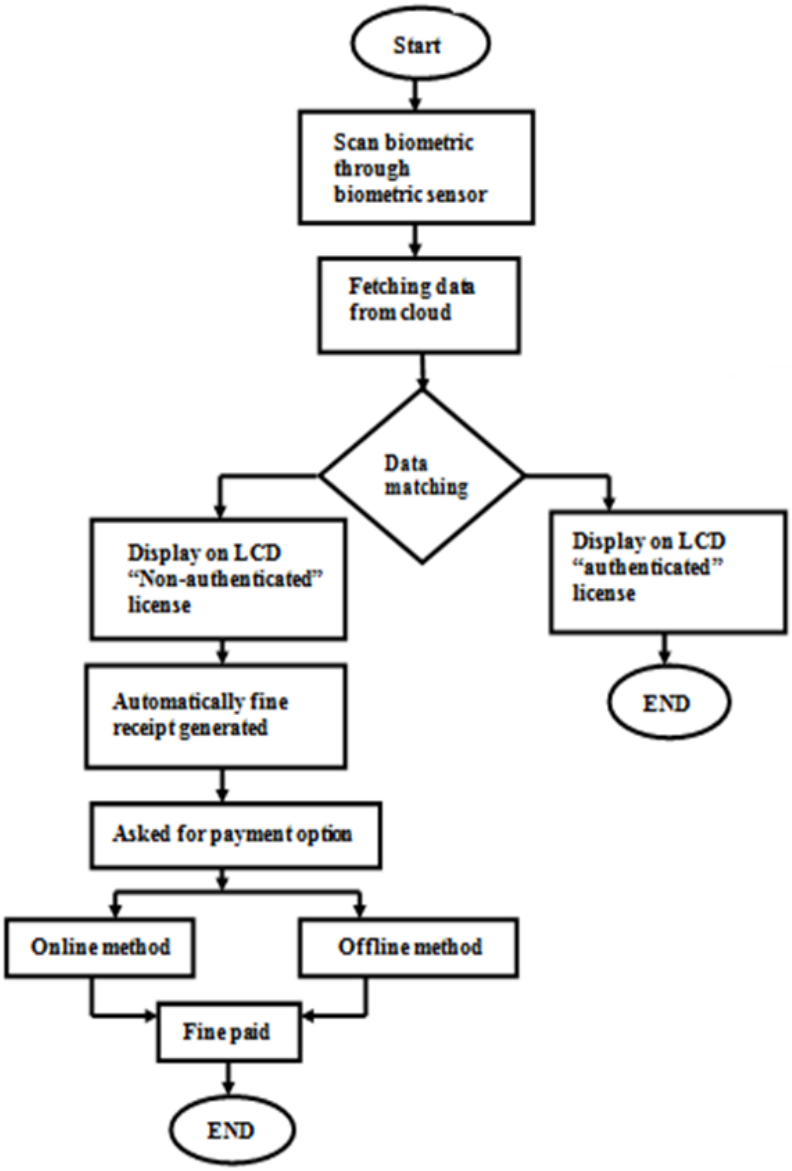


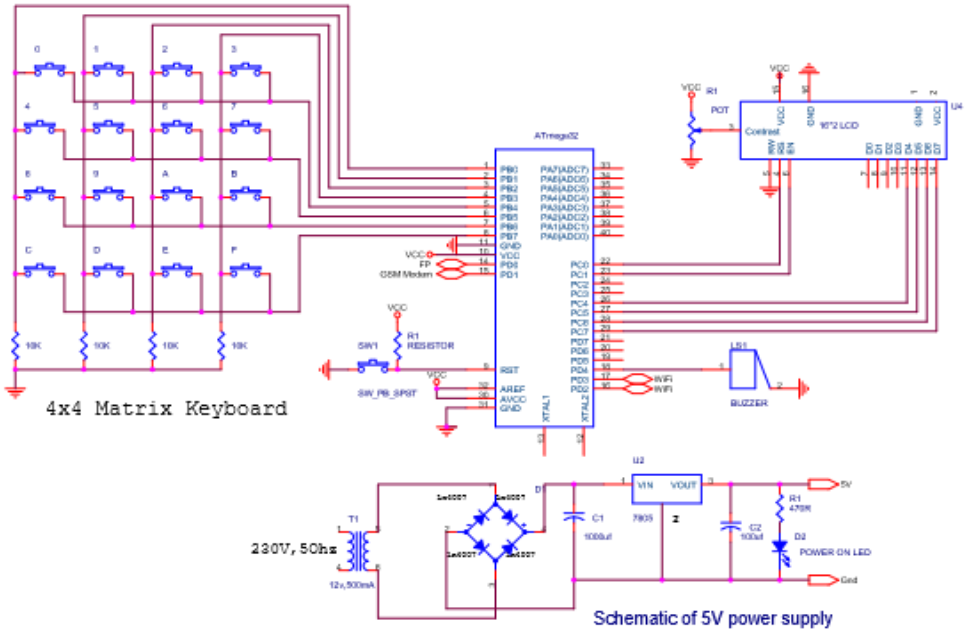
Fig.2: Flow Chart

Minutiae Matching Algorithm

At the time of the finger enrollment process, the fingerprint sensor scans the fingerprint, and using C55X DSP IC it converts it into the digital image. Then it identifies minutia points and creates the template ID accordingly based on the positions of minutiae.

The result of fingerprint matching depends on the match score between the different fingerprints and user fingerprints. The minutiae matching algorithm is efficient and fast as compared to other algorithms. It uses the structure relating local minutiae for finding coarse alignment between the fingerprints. Minutiae contain various attributes like ridges, arch, loop and whorl.

III. Experimental Details



. Fig.3: Circuit Diagram

IoT GET-POST Requests:

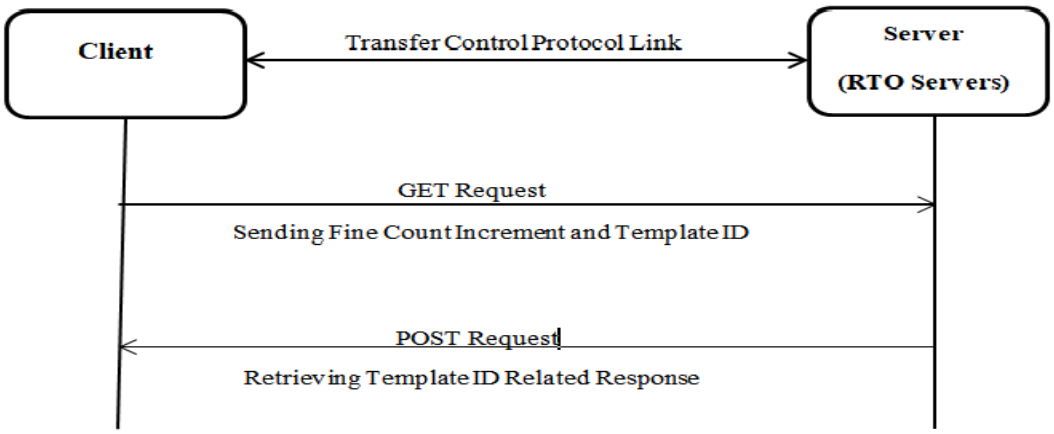


Fig.4: GET-POST RequestHandling

IV. Simulations/Results

This is the simulation of ATmega328P with GSM. In this GSM is interfaced and then various commands are run on a virtual terminal.
These commands are:

i) AT- This command is for testing purpose of GSM.
ii) ATE0- This instruction is to disable the echo.
iii) AT+CMGF=1 – This command is to work GSM in text mode.
iv) AT+CMGS – Using this instruction we can provide the required mobile number.

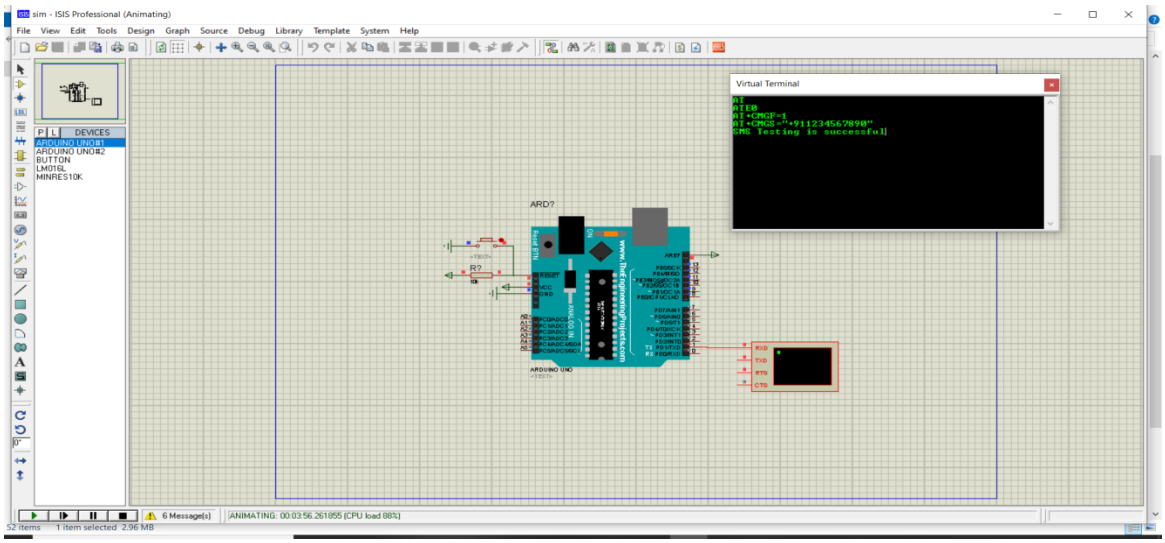


Fig.5: Simulation Result of GSM using Virtual Terminal

Fig.6: Website page to monitor RTO fine count

This is the hardware implementation of a proposed system for "Smart Driving License Verification System".

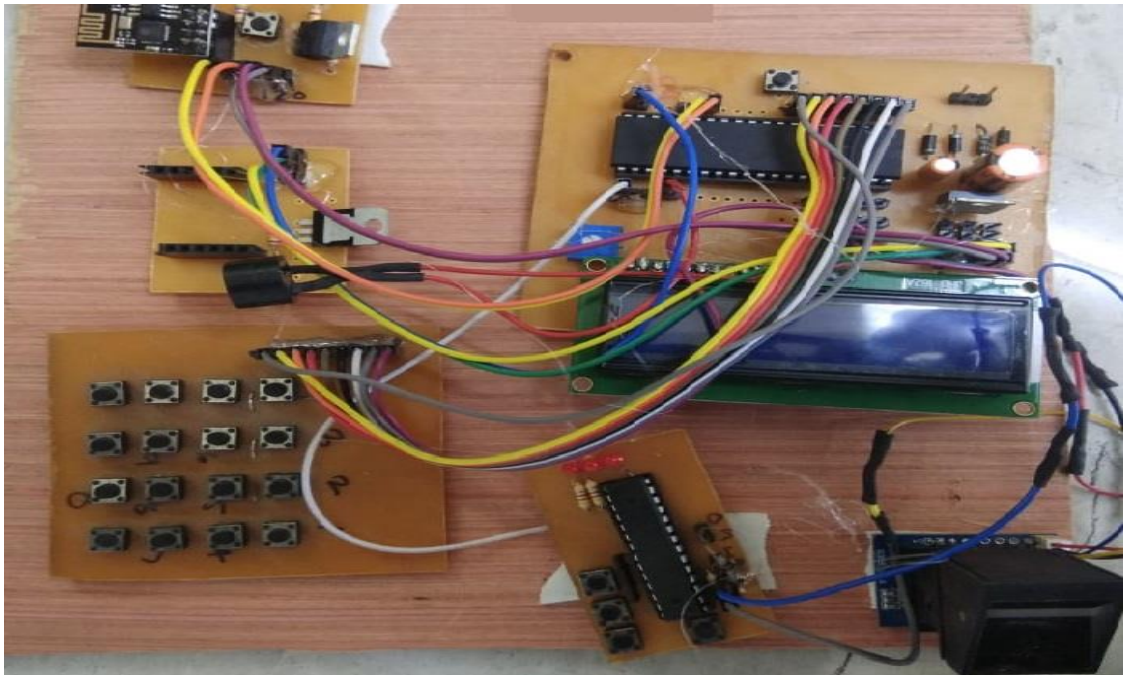


Fig.7: Hardware Implementation

Fig.8: Outputs on LCD

V. Conclusion

Fingerprint authentication is proved to be a dynamic and high-performance system because of its availability of compact and cheap fingerprint readers. Many identification systems and access control applications rely on fingerprint recognition which is a unique dominant. Future development in security can be made by using the same modem technologies like advanced sensors. E.g. retina sensor, face recognition.

Using fingerprint-based licensing and authentication technique it will be easy to find out the non-licensee and preventing them from driving illegally. Fingerprint authentication scheme which is a non-imitable authentication scheme. At the time of issuing a license person's details and fingerprint will be stored on the server. So at anywhere, the person should place on his finger on the fingerprint reader. That person's entire information will be displaying. Hence our project fulfills to catch the non-licensed person and their vehicles from driving, to identify the fake users, it helps to identify the unregistered vehicles, it also helps licensed person to avoid paying fine, sometimes if they kept their license at home. Finally, a fingerprint-based licensing authentication scheme is achieved by maintaining the simplicity for future application.

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