

IoT Based e-License System using Fingerprint Sensor

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ABSTRACT

Driving license system is a very difficult task for the government to monitor. In this project, all the citizen's information will be recorded. Whenever a citizen crosses the traffic rules, the police scan his finger print with the help of a finger print scanner and the officer gets the license information of that citizen. Again with the help of the server the citizen pays the penalty from his account which is attached with the license. Also the citizen is able to see the account of him which is attached with the license number with the help of user ID and password.

I. INTRODUCTION

The main objective of the project is to prevent non-license citizens from driving and causing accidents, a new system is proposed. An important and very reliable human identification method is finger print identification. Finger print identification is one of the most popular and reliable personal biometric identification methods. In this project we have developed the citizen's account attached with their license for payment of penalty charges of traffic rule breaking as well as the citizens are able to check their account details or penalty details with the help of user ID and password provided by the RTO. Whenever a citizen breaks rules, the applicable charges of rule will be sent on citizens' registered mobile number using SMS. OTP will be sent to the citizen to conform further payment process. The information about the citizen is stored online on the server and the citizen can have access to their account on the website of RTO. The citizen will get a message on their registered mobile number about insufficient balance on their account.

II. LITERATURE SURVEY

The literature survey is carried out related to technology impact in the "E-License System", as follows. ALPANA GOPI [1] introduces an Automation of Road Transport Department through Cellular Network, verification of the License and Vehicle documents electronically, and reduces a lot of paper work and manual efforts. NILAV MUKHOPADHYAY [2] proposed a novel method called QR code in Smartphone. With this system, the driver goes through the verification process in a reliable and efficient manner. PRAVEENKUMAR N.HADAPAD [3] Developed "Cross Verification of Driver and License for RTO", a system that facilitates for RTO officers to perform verification of license and vehicle documents through an android application. SANJEEV SHELAR [4] presents an application which will facilitate the digitization of all documents which are required for the vehicle verification.

From the above survey, it is clear, that work based on driving license is very less. Hence we are proposing a novel method called “IoT Based e-License System using Fingerprint Sensor”, and demonstrated its effectiveness for some test data. Experimental evidence shows that this technique is easier and faster than the other methods used in the survey.

III.METHODOLOGY APPLIED

Whenever a citizen is caught breaking a law, the persons biometric scan is carried out to open his e-License account from the database. The account provides name, DoB, License no., address and blood group also provides data with the past information about the violation of laws with the fine settlements. Once the account is signed in the person gets knowledge about the violated law and the fine to be paid for it. Then the citizen receives OTP on the registered mobile no. for the payment of fine. Then the citizen tells the received OTP to the police, the OTP is firstly verified by the system and then the settlement of the fine is done from the citizens’ bank account or RTO wallet.

The citizens are provided with their login ID and passwords so that the citizen can also log in into their account on the database website to get information about their violated laws, all fine settlements, deductions from the bank account and as well as from RTO wallet. The citizen has provision to add or remove or change their bank account from the database.

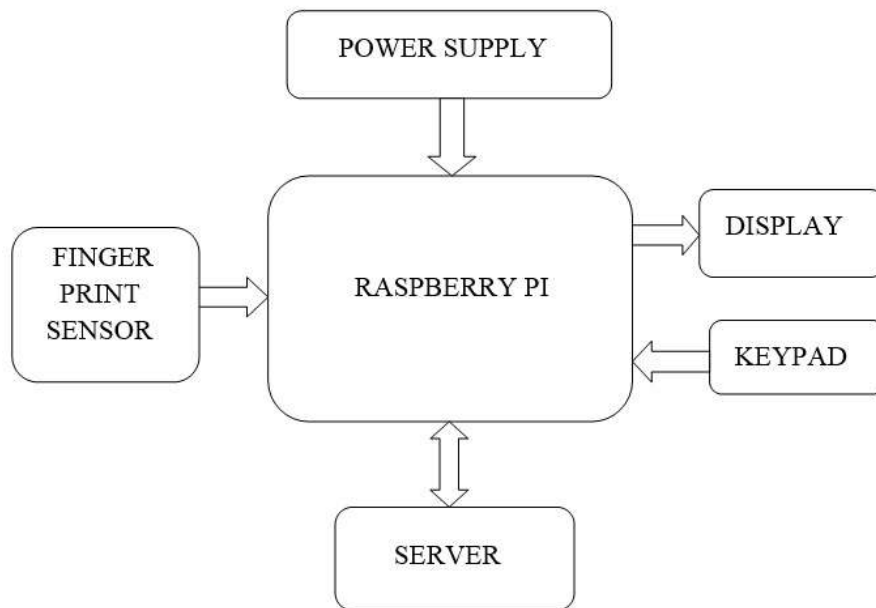


Fig.1 Block diagram of the System

IV.HARDWARE DESCRIPTION

1. Raspberry pi Zero

The Pi Zero - the smallest, thinnest, most-affordable Pi ever. So much so, it comes free with every issue of MagPi #40. The Pi Zero is small and thin 65mm long x 30mm wide x 5mm thick. To keep the Pi Zero low cost, the processor and RAM are kept pretty basic. Instead of the Pi 2's zippy quad core ARM v7, we're back to a single-core 1GHz ARM (same processor in the Pi Model B+ and A+). We also have 512 MB of RAM with a 'package-on-package' setup. Not much has changed here, we're still going with Micro SD for size and ease of use.



Fig.2 Raspberry-pi zero

This time the card holder is up top and is push-pull style not push-push. HDMI Video is still available, you'll want to use a Mini to Standard HDMI adapter to connect an HDMI cable. There's no 3.5mm jack with composite out, however you can get PAL or NTSC out via two 0.1" pads. No analog audio out, but if you connect HDMI to a monitor with speakers you will get HDMI digital audio. It's also possible to hack analog audio out with a few passive components, see our more detailed look at Pi Zero audio output options. Like the Pi Model A+, the Pi Zero does not have a USB Hub built in which means you get one USB port. Moreover that USB port is not a standard type A port, instead it is a 'USB On-The-Go' port. In order to connect a USB device (mouse, keyboard, Wi-Fi) you'll need a USB OTG micro B to A cable.

2. Fingerprint sensor:



Fig.3 Finger print sensor

R308 is a separate fingerprint reader, used high speed special DSP as core parts, compatible different fingerprint sensor. It is an intelligent module which can freely get fingerprint, image processing, verified fingerprint, search and storage, and it can work normally without upper monitor's participatory management. Fingerprint processing includes two parts: fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1:N). Enrolling fingerprint, user needs to enter the finger 2-4 times for every one finger, process finger images with many times, store generate templates on module. When fingerprint matching, enroll and process verified fingerprint image and then matching with module (if match with appoint templates on the module, named fingerprint verification, For 1:1 matching method; if match with many templates on the module, named fingerprint search method also named 1:N) system will return the matching result, success or failure.

V.CONCLUSION

E-License system will be the best invention which will definitely help in maintaining the centralized national database and again as the finger will act as a license it's not required to carry the license. The System is user friendly. System is having centralized database so it's easy to get the details of each license of any state.

VI.FUTURE WORK

The application can be enhanced with the different concepts like Face Recognition and Number Plate Recognition through image/camera, send a message to the drivers about the expiry dates of documents, verifying the vehicle-related information such as RC book, emission test, insurance and etc. It is a practical project, it can be dispatched in Real-time Environment.

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