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Secure Automated Fuel Station and Fake Document Detection System Using RFID TAG

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Abstract - *At present era in our country there are so many people who are not having their original driving license with them. Some of the peoples are maintaining fake license, due to this the ratio of accidents increasing day to day. The proposed approach of data mining can be helpful for getting the original documents online basis based on fingerprint. In order to avoid this kind of problems the project is proposed to provide driving license verification system using fingerprint reader. finger prints of the user will be taken and their respective details like license identification number, photo, adhar card number are maintain along with the driving license database. The officers want to check the driving license of vehicles users; the verification system is used to authentication liability of the vehicle user license. In this system compare mobile location and pump location if user is near to petrol pump then user mobile phone automatically switches off or on. In petrol pump user enter input and scan his/her fingerprint. The user get fuel and account balance automatically debited.*

Key words: *RFID, Sensors, Biometric Machine and Self Served*

1.INTRODUCTION

Nowadays, fuel stations are operated manually. These fuel pumps are time consuming and require more manpower. To place fuel stations in distant area it very costly to provide excellent facility to the consumers all these problem is sorted out by the use of unmanned petrol pump which requires less time to operate and it is effective and can be installed anywhere the customer self- going to avail the services the payment is done Biometric machine system. In our system the RFID will be used to detect the vehicle and to scan Barcode generated by adhar machine. Biometric adhar Finger Scanner provided by the fuel station which will help the petrol company to create authentication for user also the distribution of the fuel is not possible until it gets verified by the database. In short we provide secure system for fuel distribution.

The proposed system is designed for driving license verification purpose based fingerprint authentication. This system can be utilized for multiple applications during driving license verification, fake licenses detection, reducing the accidents and crime rate, maintain the database of employees working at offices, multiplexes, etc.

Our proposed system is fully automated so that there is no manpower required to maintain the pump. Ease of transaction, transparency and safety is assured to the users too. Our aim is to reduce the working manpower and to upgrade the current fuel stations to a whole new level using technologies.

1.1 MOTIVATION

Now a day it's too difficult to carry the original hard copy document on daily basis which sometimes increase the chances to lose them.

If such online documents gathering schemes will have launched will help the people to drive without carrying documents.

It's also helps to verify the document originality of people.

1.2 PROJECT SCOPE

The scope of the system is help to avoid traffic congestion avoid unnecessary delay of collection of toll, petrol pump and also focus on unregistered vehicles.

2 EXISTING SYSTEM AND DISADVANTEGES

MANUAL CONTROL:

In this, the control and automation are done by Manual Operation.

Drawback: Human Errors subsequently affects the quality of end product. Hardwired Logic Control. In this, Contractors and Relays together with timer and counters were used in achieving desired level of Automation. Bulky and complex wiring, involves lot of rework to implement changes in control logic, Work can be started only when it is fully defined which leads to longer project time.

ELECTRONICS CONTROL WITH LOGIC GATES:

In this, Contractors and Relays together with tillers and counters were replaced with logic gates and electronics timer in control circuit.
Advantage: - Reduced spare requirement, energy saving, less maintenance and
hence greater reliability.
Drawback: - Implementation of changes in the control logic as well as reducing project lead-time was not possible.

PROGRAMMABLE LOGIC CONTROL: In this, instead of achieving desired control and automation through physical wiring of control devices, it achieving through program say software.

Advantage: -Energy Saving, Reduced Space, Modular replacement, Easy troubleshooting, Error Diagnostics programmer.

Drawback: -Expensive, it requires Third parties license, Bulky to carry, Expert person required. Above processes are used for automation from several decades as their technologies were developed. As each of them having some drawback to overcome them we are replacing them with other technology.

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If such online documents gathering schemes will have launched will help the people to drive without carrying documents. It's also helps to verify the document originality of people.

LITERATURE SURVEY

1. "Ajay Shankar Patil, Sayli Adesh Patil, Fingerprint Authorization Based License Checking System for Auto-Mobile" International Journal on Recent and Innovation Trends in Computing and Communication April 2016.
To Obstruct Non-Licensees From Driving And Causing Accidents, A New
Advanced Automobile System Is Proposed. An Important, Trustful And Very
Reliable Human Identification Method In Current Dates Is Fingerprint Identification.
Fingerprint Identification Is One Of The Most Popular, Trustful
And Reliable Personal Biometric Identification Methods. The Proposed System
Contains A Database, It Saves the Fingerprint of a Particular Person. While Issuing the License, The Specific Person's Fingerprint Is to Be Saved in The database. Vehicles Such as Cars, Bikes Etc. Should Have a Fingerprint Reader and Have Accomplished to Read Data of the Particular Person's License Details.

In This System Every Automobile Should Have Fingerprint Reader Device. A Person, Who Wants to Drive the Vehicle, Should Swipe His/her Finger (License) In The Vehicle. If The Fingerprint Image Stored On the Smart Card and Swiped in The Device Matches, He / She Can Proceed for Ignition, Otherwise The Ignition System Will Not Work. Moreover, The Seat Belt Detector Verifies and Then Instigates the User to Wear the Seat Belt Before Driving the Car. This Increases the Security of the Vehicles and Also Ensures Safe Driving by Preventing Accidents. In Case the Ignition System of a Car Is Started with The Influence of Valid Licensed Person.

There Is a Chance to Change the Driver of the Vehicle. So We Are Additionally Amending Our License Verification System in Road Side Also By The Helpful for Police Verification System.

2. M. Vijay Kumar, S. Ranjith Kumar, "Fingerprint Based Licensing System for Driving" International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 9, September 2014
The paper presents the designing of finger print identification in cars to avoid car theft using GSM and FPGA. Fingerprint identification is one of the most
popular and reliable personal biometric identification methods. The proposed system was designed on keyless car instead of going with key based authentication.
we are providing with biometric based authentication. A person, who wishes to drive the vehicle, should verify with their face reorganization and finger print whether he was having license or not, once verification done then ignition unit of car will start automatically. If the person is not verified in the Face recognition the alarm unit will be on, SMS and MMS will be sent to the
owner.

3. Mubin Shaikh, Azhar Hakim, "Biometric E-licence" International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 01 Jan-2018
Fingerprints are rich in details which are in the form of discontinuities in ridges known as minutiae and are unique for each person. One of the most important

tasks considering an automatic fingerprint recognition system is the minutiae biometric pattern extraction from the captured image of the fingerprint. The fingerprint matcher compares features by using Digital Image processing from input search point against all appropriate driving licenses in the database to determine if a probable match exists. With this implementation, there'll be no need to carry documents along. A single fingerprint and an image will be enough to recognize and verify the individual and the vehicle. Mobile platforms such as smart-phones and tablet computers have attained the technological capacity to perform tasks beyond their intended purposes.

The steady increase of processing power has enticed researches to attempt in- YTIET, Department of Computer Engineering 2019-20 creakingly challenging tasks on mobile devices with appropriate modifications over their stationary counterparts. In this work we describe main features of software modules developed for Android smartphones that are used by RTO officers for license and vehicle documents verification. In this project we use biometric approach like fingerprints and vehicle number plates for verification.

4. G Santhosh, B Santosh Kumar, 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 SMARTCARD 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.

5. J. Angeline Rubella, M.Suganya, "FINGERPRINT BASED LICENSE CHECKING FOR AUTO-MOBILES"
Driving license system is a very difficult task for the government to monitor.
In this project, all the citizens' images will scan and recorded. Whenever a citizen crosses the traffic rules, the police can scan his image and can collect penalty / fine from the defaulter. Using this method, the police can track the history of the driver. This biometric based driving license monitoring system is very easy and convenient to monitor.

PROBLEM DEFINATION

In this system user can easily scan fingerprint and get fuel. The system helps to avoid traffic congestion avoid unnecessary delay of collection of toll and also focus on unregistered vehicles. we developed fingerprint based toll collection system.
To develop technology that include android application and biometric (fingerprint) device to provide digitalization to both, an individual and RTO system.

PRAPOSED SYSTEM

In the system architecture compare mobile location and pump location if user is near to petrol pump then user mobile phone automatically switches off or on. In petrol pump user enter input and scan his/her fingerprint. The user gets fuel and account balance automatically debited. An important human identification method is fingerprint identification. No Two person can have same arrangement of ridge patterns and patterns of any individual remains unchanged throughout his life Whenever the officers want to check the driving license of vehicle users, the verification system is used to authenticate liability of the vehicle user license and Vehicle documents also
at the time of vehicle registration, the adhar card and photo id need to be carry out that means our Biometrics its be connected to vehicle registration. It's easy to gathers to validate the Vehicle document also. Existing RTO offices didn't have systematic driving license verification system so these proposed system helps to gather original documents also. During The Enrollment Phase, The Fingerprint Sensor Scans The User's Fingerprint and converts it into a digital image or Template.

1. Node MCuWifi Module NodeMCU is a Firmware on ESP8266. ESP8266 is a low-cost,WiFi Module chip that can be configured to connect to the Internet for Internet of Things (IoT) and similar technology Projects. Basically, your normal Electrical and Mechanical equipment cannot connect to the Internet on their own. This board will be connected to internet to send data to the cloud server. This module will perform the controlling action the system. It receives signal from sensors act performs different operation.

2. Fingerprint sensor A fingerprint scanner is a type of technology that identifies and authenticates the fingerprints of an individual in order to grant or deny access to a computer system or a physical facility. For this project we are using this sensor to authenticate the user and to keep record of it.

3. Keypad Most of the applications of embedded systems require keypads to take the user inputs, especially in case where an application requires more number of keys. With simple architecture and easy interfacing procedure, matrix keypads are replacing normal push-buttons by offering more inputs to the user with the lesser I/O pins. For this project we provide the input from the keypad.
The user enter the volume of fuel required using this keypad.

4. LCD Display 16_2 LCD is named so because; it has 16 Columns and 2 Rows.
There are a lot of combinations available like, 8_1, 8_2, 10_2, 16_1, etc. but the most used one is the 16_2 LCD. So, it will have (16_2=32) 32 characters in total and each character will be made of 5_8 Pixel Dots. This will display the amount of fuel and the cost of the fuel.

5. Flow Sensor Flow sensors are devices which are used to measure a flow rate of Fluid. There are different types of flow sensors which are designed to measure mass flow and pressure sensing in different types of applications. We are using it for measuring the amount of fuel outlet. This will allow the system for precise control of fuel dispensing out of the pump.

6. Cloud Server A cloud server is a virtual server (rather than a physical server) running in a cloud computing environment. It is built, hosted and delivered via a cloud computing platform via the internet, and can be accessed remotely.
They are also known as virtual servers. It is used to provide a communication between the user's phone and the system. Data is also stored in the cloud server. It provides a safe and reliable environment for communication.

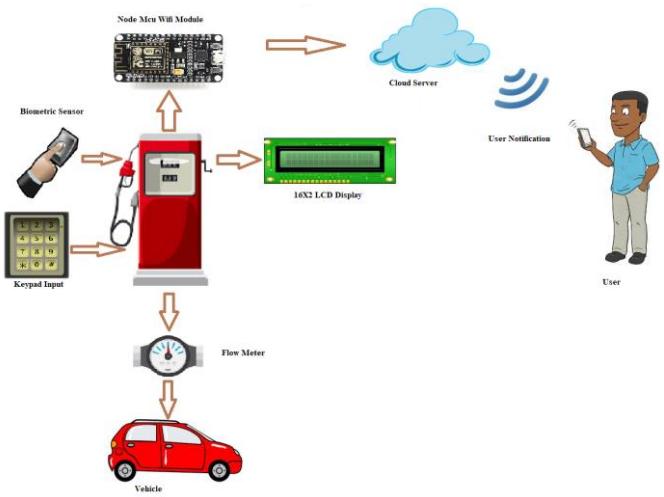

Figure 5.1: System Architecture

HARDWARE AND SOFTWARE REQUIREMENT

SYSTEM REQUIREMENT

Database Requirement

MySQL Database Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software application may run either on the same computer or on another computer across a network (including the Internet). Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and for workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.

Software Requirements

Platform:

1. Operating System: windows 7 and above.
2. IDE: Net Beans 8.2
3. Programming Language: Java, HTML, CSS, Bootstrap, JavaScript
4. Tool Kit: JDK 1.8

Hardware Requirements

1. Processor: Pentium Processor Core 2 Duo or Higher
2. Hard Disk: 250 GB (min)
3. RAM: 1GB or higher
4. Processor Speed: 3.2 GHz or faster processor

5. Node MCU
6. Fingerprint Device
7. LCD Display
8. Flow Sensor

APPLICATION

1. Tollbooth transaction
2. Petrol pump transaction
3. RTO transaction
4. This model is simple and easy to understand and use.
5. It is easy to manage due to the rigidity of the model, each phase has specific deliverables and a review process.
6. In this model phases are processed and completed one at a time. Phases do not overlap.
7. Waterfall model works well for smaller projects where requirements are very well understood.

3. CONCLUSIONS

User can easily scan fingerprint / RFID TAG and get fuel. The system helps to avoid traffic congestion avoid unnecessary delay of collection of toll and also focus on unregistered vehicles. we developed fingerprint based toll collection system.

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