

Prepaid Petrol Bunk Management System Using RFID Cards and GSM Communication

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Abstract— Our project is designed to eliminate the human interaction so that there is no need of workers to collect cash and fill the petrol. In this system, we have unified RFID card detection and face recognition for petrol dispensing. All drivers have a smart card called RFID card which has recharged. The petrol pump is equipped with a smart card reader which reads the card. The face recognizer identifies the face. If both matches then the petrol will dispense according to the amount entered by the user. If face not matched then automatically sends OTP to the authorized mobile via GSM. By entering the received OTP by the user, the system asks to enter the amount then the petrol will dispense into the vehicle according to the amount entered by the user and automatically turn off.

Index Terms—Arduino UNO, ESP32 CAM, GSM and petrol pump.

I. INTRODUCTION

Now-a-days everything has been digitized. For example online banking, cash management and computerized petrol pump. Considering the computerized petrol pump, a lot of work has been already done in this field. That is some petrol companies provide the smart cards to the customers to access the petrol at the petrol station of their company. But in our system we are using RFID card and the face recognition to access petrol at different petrol stations. Whenever we want to fill the tank just we have to place the RFID card near the RFID reader. Then system reads the data from the RFID reader and performs the action according to the customer. This system also provides the security for the customers for petrol filling at the Petrol stations by avoiding the

involvement of human beings, so to avoid the risk of carrying money every time.

The goal of the RFID based automated petrol pump is to reduce human labour by developing an auto-guiding system and implementing the operation in a sequential manner. These systems are extremely dependable and time-saving devices. The main attraction of this project is that it eliminates human interaction & avoids situation of black selling as there is no serviceman.

II. LITERATURE SURVEY

sylvanius F. Bowser [1] concocted a thought drawn water from a well by utilizing a wooden plunger. Around 1885, he utilized this thought if there should be an occurrence of petroleum pump and turned into the organizer of S.F.Bowser Pump Company. Punit Gupta; Sawan Patodiya [2] It describes the design and implementation of a Smart Petrol Pump that will measure the amount of fuel at a gas station and send the information to a central server. If the station's fuel supply is depleted, the central will provide gasoline. Our goal is to build a website that gets the fuel level from the petrol station where our hardware is located and sends it back to a site that admins and users can visit. We utilize an ultrasonic sensor to determine the amount of fuel in the tank.

III. METHODOLOGY

This work develops a prepaid petrol bunk in which one customer having the RFID smart card enters the petrol pump, the reader at the pump unit reads the

RFID information. When RFID reader, reads the unique card it asks for face recognition. It dispenses the petrol if both matches. In addition to this an OTP provides some more security to the system. The proposed system of this project is shown in Fig 1. Workflow of the proposed system The work flow of prepaid petrol bunk is explained in this section. The flow chart of the proposed system is illustrated in Fig 1.

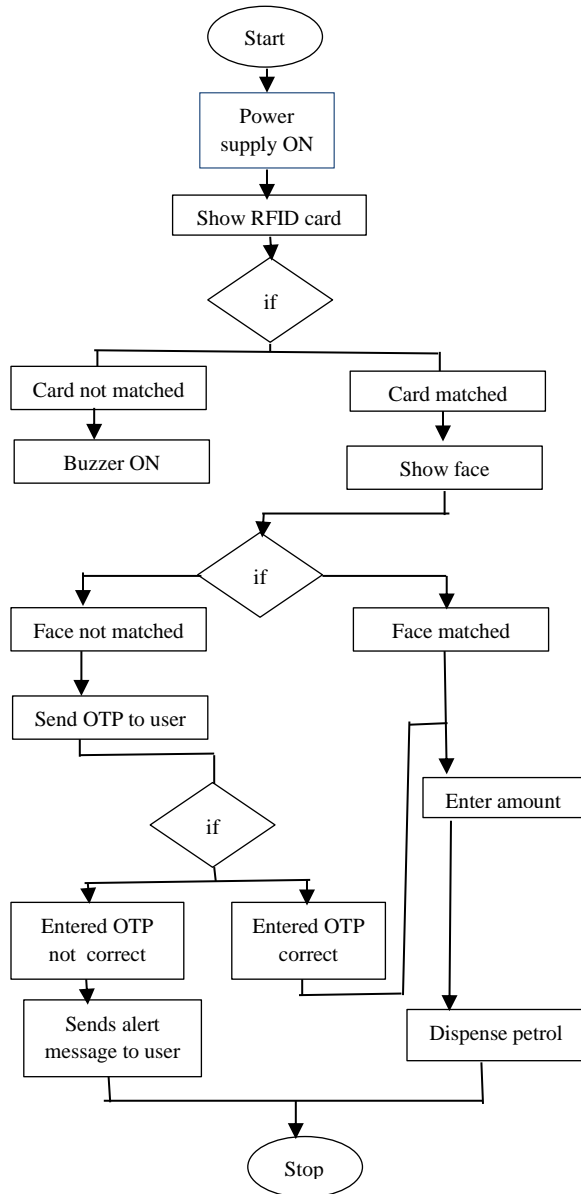


Figure 1 Flow chart

- Step 1:** Start.
- Step 2:** Switch ON the 12V power supply.
- Step 3:** Press reset button.

Step 4: Show the RFID card. If it is not a valid card, turn ON buzzer.

Step 5: If card matches, show face to ESP32 CAM.

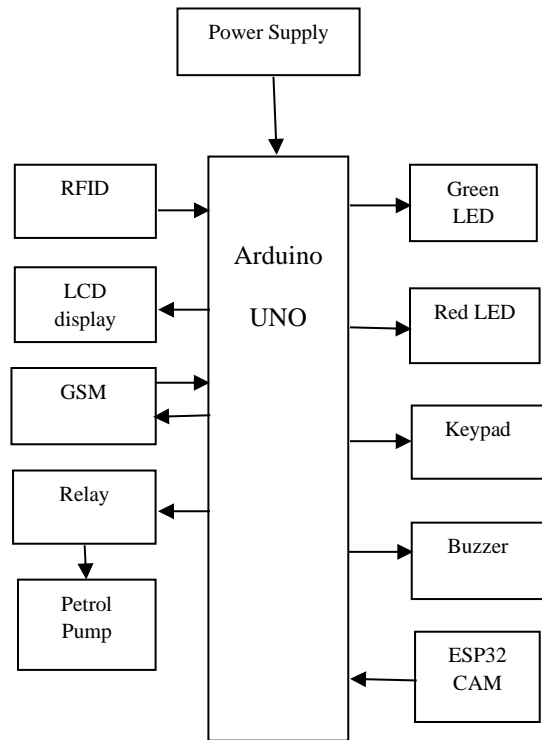
Step 6: If both matches then the petrol will dispense according to the amount entered by the user.

Step 7: If face not matched then it automatically sends OTP to the authorized mobile via GSM. By entering the received OTP by the user, the system asks to enter the amount then the petrol will dispenses into the vehicle according to the amount entered by the user and automatically turn off.

Step 8: If the entered OTP is incorrect then it sends an alert message to user.

Step 9: Stop

IV. BLOCK DIAGRAM



Use either SI (MKS) or CGS as primary units. (SI units are strongly encouraged.) English units may be used as secondary units (in parentheses). This applies to papers in data storage. For example, write —15 Gb/cm² (100 Gb/in²). An exception is when English units are used as identifiers in trade, such as —3½ in disk drive. Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not

balance dimensionally. If you must use mixed units, clearly state the units for each quantity in an equation. The SI unit for magnetic field strength H is A/m . However, if you wish to use units of T , either refer to magnetic flux density B or magnetic field strength symbolized as $\mu_0 H$. Use the center dot to separate compound units, e.g., $-A \cdot m^2 \cdot l$

V. RESULT

According to the proposed plan the final outcome of this paper leads to the development of a prepaid petrol bunk. Through this project, the petrol dispense system has been created so that these automated fuel stations provide a lot more advantages as they reduces man power with the automated self service. With this simple technology in use, any person can easily access for fuel at Fuel Stations. Apart from this all ,these systems are less time consuming compared to the traditional ones. The technology proposed is very cost efficient and has low power consumption.

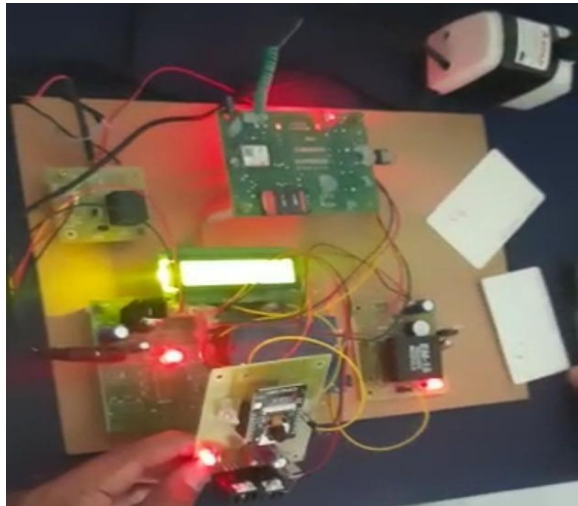


Figure 3: OUTPUT

VI. CONCLUSION

RFID system is a versatile technology where we can save our time, money, etc., This RFID system is used in many application based industries and real time application. In our application, RFID system dispenses the accurate amount of fuel which required for the customer need and it will reduces the misuse of the fuel. And if the customer tries to swipe with the unauthorized card, the RFID system rejects the card so system

is fully secured. To obtain best performance the RFID readers and Tags must be in good quality and they should be maintained properly. These automated fuel stations provide a lot more advantages as they reduces man power with the automated self service. With this simple technology in use, any person can easily access for fuel at Fuel Stations. Apart from this all ,these systems are less time consuming compared to the traditional ones. The technology proposed is very cost efficient and has low power consumption as well, which sets the major benchmark in today's scenario.

VII. FUTURE SCOPE

This project gives us an opportunity to do a big project in future. The applications stated above are some demo applications that are absolutely possible with its future development. Initially for the limitation of time and required fund we were able to develop just a prepaid petrol dispense system. We hope that, we will be able to complete all the features needed for its ultimate applications.

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