IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AUTOMATIC PETROL PUMP BY USING BIOMETRIC

I.Chalma Reddy[1], K.Sanjana[2], [3], K.Anuja[2]

Dept of Electronics & Communication Engineering, TKR College of Engineering & Technology, India.

MR.A.VIKAS[4]

Associate Professor, Dept. of Electronics & Communication Engineering, TKR College of Engineering & Technology, India.

ABSTRACT

An automatic petrol pump using biometric technology is a system that allows guests to refuel their vehicles by authenticating their identity using biometric information similar as fingerprints, iris reviews, or facial recognition. An automatic petrol pump using biometric technology offers a secure and accessible way for guests to pierce energy, reducing the need for physical cards or cash, and enhancing security at the pump. still, it would bear robust security measures, proper conservation, and compliance with applicable regulations to cover client data and insure dependable operation. Overall, an automatic petrol pump using biometric technology can give an accessible and secure way for guests to refuel their vehicles while minimizing the need for physical cards or cash and reducing the threat of identity.

I. Introduction

In moment's world, technology has had a significant impact on nearly every aspect of our lives, including the energy assiduity. Petrol is one of the most important goods that we bear in our diurnal lives. It powers our vehicles, creators, and machines. Petrol stations are responsible for furnishing petrol to consumers in a safe and effective manner. The traditional petrol pump system requires guests to make cash or card payments to the energy attendants, which can be time- consuming and inconvenient. To address this challenge, colourful energy stations have espoused automatic petrol pump systems that offer a flawless and effective fuelling experience The automatic petrol pump by using biometric technology is an innovative result that has been developed to make the fuelling experience more accessible, briskly, and secure. Biometric technology refers to the use of natural characteristics similar as fingerprints, facial recognition, and iris recognition to authenticate a person's identity. The automatic petrol pump system uses biometric identification to authenticate the client and automatically apportion energy to the vehicle without any mortal intervention. This system has multitudinous

advantages over the traditional petrol pump system and is gaining fissionability among energy stations and consumers. The automatic petrol pump by using biometric technology has multitudinous benefits over the traditional petrol pump system. originally, it eliminates the need for cash or card payments, making the fuelling process briskly and more accessible. The system uses biometric authentication to identify the client, and the payment is made automatically without the need for the client to make any physical payments. This reduces the time spent staying in line to make payments, performing in briskly and more effective fuelling. Secondly, the automatic petrol pump by using biometric technology ensures security by precluding unauthorized access to the energy station, reducing the threat of fraud and theft. The system uses biometric identification to authenticate the client, and only sanctioned guests are allowed to pierce the energy station. This helps to reduce the threat of fraud and theft, which is a significant concern for energy station. Thirdly, the automatic petrol pump system helps in monitoring and controlling the energy division, therefore reducing energy destruction and icing accurate billing. The system keeps track of the quantum of energy allocated to each vehicle and generates accurate bills, which eliminates the possibility of crimes in billing. The system also helps in covering the energy stock situations, icing that the energy station always has enough energy to me et client demand. The automatic petrol pump system operates in a simple yet effective manner. Upon appearance at the energy station, the client is needed to register their biometric details at the enrolment cell. The biometric data is also stored in the system's database, and the client is issued with a unique ID number. During posterior visits to the energy station, the client only needs to input their ID number, and the system will authenticate their biometric details and apportion energy to the vehicle.

The automatic petrol pump by using biometric technology has multitudinous benefits to both the energy station and the guests. For the energy station, it ensures accurate billing, reduces energy destruction, and enhances security. On the other hand, guests enjoy a briskly, more accessible, and secure fuelling experience. The system eliminates the need for physical payments, reduces staying time, and ensures that only authorized guests pierce the energy station.

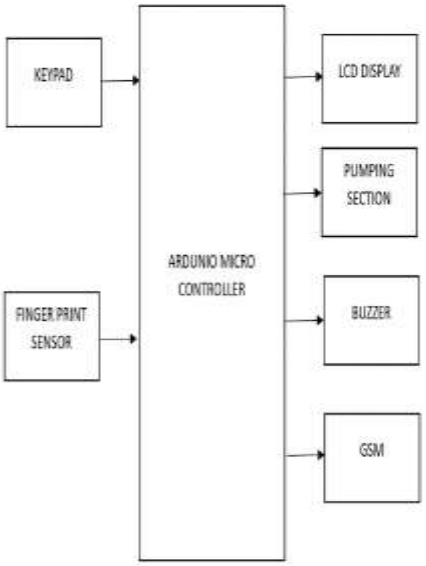

Figure 1. Block diagram

II. Existing system

An automatic petrol pump using biometric technology is a relatively new concept in the fuel retail industry. It aims to offer a secure and convenient method for guests to access fuel by using their biometric information for authentication.

Currently, most fuel pumps require guests to either pay using a physical card or cash. This method has some security risks as physical cards can be lost or stolen, and cash can be subject to theft. Biometric technology provides a more secure method of authentication, as each person's biometric information is unique and difficult to replicate.

Some existing automatic petrol pumps using biometric technology already exist in the market, and they typically use facial recognition for authentication. Guests simply approach the pump, and the camera will scan their face to verify their identity. Once authenticated, the pump will dispense fuel to the desired amount.

One such system is the "MAYA" automatic petrol pump by UAE-based company ENOC. The system uses a combination of facial recognition and license plate recognition technology to offer a seamless and secure refuelling experience. The system also includes various safety features, such as automatic shut-off if the fuel tank is full, and real-time monitoring of fuel levels and pump performance.

Another example is the "Green Gas Station" in India, which uses biometric authentication via fingerprint recognition. The system offers a more environmentally friendly refuelling option, as it uses natural gas instead of traditional petrol or diesel.

Overall, automatic petrol pumps using biometric technology offer a promising solution to the security risks associated with traditional payment methods. While still in their early stages, these systems have the potential to become a standard in the fuel retail industry in the future.

III. Proposed system

The proposed system for an automatic petrol pump using biometric technology aims to streamline the fuelling process by barring the need for physical payment styles and reducing the chances of fraudulent conditioning. The system would use biometric authentication to identify and authorize guests, making the fuelling process more secure and effective. Then are some crucial factors of the proposed system Biometric Registration guests would need to enrol their biometric information, similar as point, iris check-up, or facial recognition, into the system at the petrol pump. This information would be securely stored in a database and used for unborn authentication purposes. Biometric Authentication When a client arrives at the petrol pump, they would need to suffer biometric authentication to corroborate their identity. This could be done using biometric detectors or cameras installed at the fuelling station. The system would compare the client's biometric information with the stored data to ensure a match before pacing to the coming step. Energy Selection and allocating Once the client's biometric information is authenticated, they can elect the type and quantum of energy they want to buy. The energy dispenser would be actuated automatically, and the named energy would be allocated into the client's vehicle without the need for any physical payment or card snatching. Automatic Payment The system would be linked to the client's bank account or payment portmanteau, and the energy cost would be automatically subtracted from their account. A digital damage would be generated and transferred to the client's registered dispatch or mobile number for record keeping. Monitoring and Security The system would have robust monitoring and security features to descry and help any unauthorized access or fraudulent conditioning. CCTV cameras, intrusion discovery systems, and other security measures would be in place to ensure the safety and integrity of the system.

IV. Working

The working principle of an automatic petrol pump using biometric technology involves several ways Biometric Registration First, guests need to enrol their biometric data, similar as point or iris check-up, into the petrol pump's database. This process generally involves capturing and storing the biometric data of the client along with other applicable information, similar as their name, address, and vehicle details, in a secure database. Biometric Authentication When a client arrives at the petrol pump to refuel their vehicle, they need to suffer biometric authentication to corroborate their identity. The client's biometric data, preliminarily enrolled in the system, is captured again and compared with the stored data for authentication. Identity Verification The system also verifies the client's identity by matching the captured biometric data with the stored data. However, the system proceeds to the coming step, If the biometric data matches. else, the system denies access to the fuelling process. sale Authorization Once the client's identity is vindicated, the system authorizes the fuelling sale. This generally involves checking the client's account balance, vehicle details, and energy type to ensure that the client has sufficient finances and the right vehicle type for the fuelling process. Energy allocating Upon successful authorization, the energy pump is actuated, and the client can start fuelling their vehicle. The system monitors the energy allocated and calculates the cost grounded on the energy type and volume. Payment Processing After the fuelling process is completed, the system calculates the total cost grounded on the energy allocated and deducts it from the client's linked payment system, similar as a credit card or a digital portmanteau. A damage is generated for the client as evidence of the sale. Logging and Reporting The system also maintains a log of all fuelling deals, including the client's biometric data, energy type, volume, cost, and payment details, for auditing and reporting purposes. System Security It's pivotal for an automatic petrol pump using biometric technology to have robust security measures in place to cover the stored biometric data and help unauthorized access. This may include encryption, firewalls, access controls, and regular security check-ups. Overall, the working principle of an automatic petrol pump using biometric technology involves biometric registration, authentication, identity verification, sale authorization, energy allocating, payment processing, logging, and system security to give a secure and accessible fuelling experience for guests.

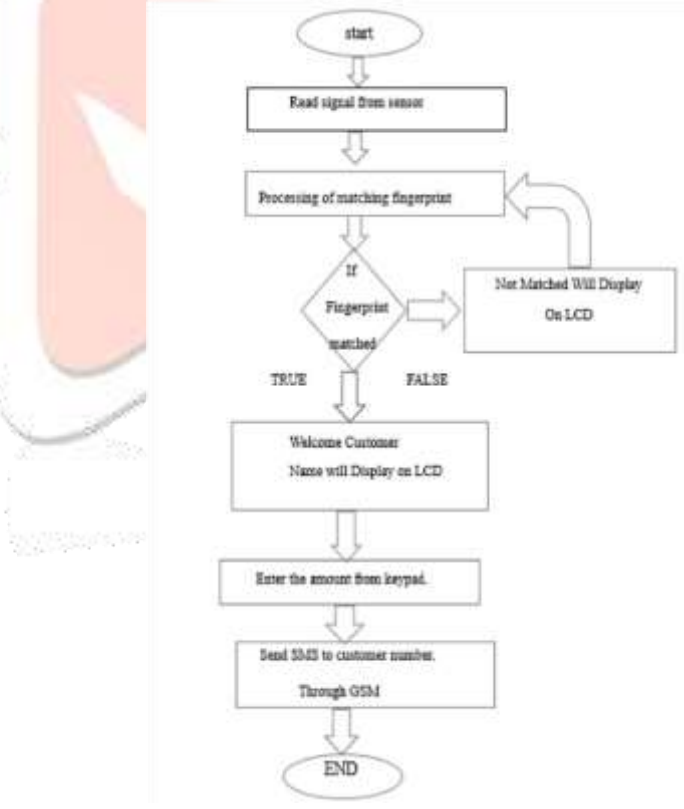

Figure 2. Flow Chart of Working

V. Implementation and results:

The perpetration of a petrol pump using biometric technology can yield colourful results, depending on the specific circumstances and the effectiveness of the system. Then are some implicit issues Enhanced Security Biometric technology can give a advanced position of security compared to traditional styles, similar as using energy cards or keys, as biometric data is unique to each individual and delicate to replicate. This can help help unauthorized access and energy theft, reducing security pitfalls and losses for the petrol pump driver. Improved Convenience Biometric systems can offer a more accessible fueling experience for guests, as they can simply use their biometric data, similar as point or iris checkup, for authentication rather of carrying physical cards or flashing back Leg figures. This can save time and trouble for guests, performing in bettered client satisfaction and fidelity. Effective sale Processing Biometric systems can streamline the fueling sale process by automating the authentication, authorization, and payment processing way. This can affect in briskly fueling deals and reduced ranges, leading to bettered functional effectiveness for the petrol pump driver. Enhanced stoner Experience Biometric technology can give a ultramodern and innovative stoner experience, which can attract and retain guests. guests may perceive the use of biometric systems as a slice- edge and accessible way to fuel their vehicles, which can appreciatively impact their perception of the petrol pump and affect in increased client fidelity. Reduced Fraud and crimes Biometric systems can help reduce fraud and crimes associated with traditional styles, similar as energy card abuse, identity theft, or homemade crimes in sale processing. The use of biometric data for authentication can give a more secure and accurate means of vindicating client individualities, performing in reduced fraudulent conditioning and sale crimes. Compliance with Regulations Biometric systems must misbehave with applicable regulations and laws, similar as data protection, sequestration, and security regulations. enforcing a biometric system that meets nonsupervisory conditions can insure that the petrol pump driver is clinging to applicable laws and regulations, reducing the threat of forfeitures or penalties fornon-compliance. Challenges and Costs enforcing and maintaining a biometric system can come with challenges and costs, similar as original setup costs, system integration, conservation, and implicit specialized issues. The results of a petrol pump using biometric technology can be told by the effectiveness of the system in addressing these challenges and managing costs. In conclusion, the result

of enforcing a petrol pump using biometric technology can include enhanced security, bettered convenience, effective sale processing, enhanced stoner experience, reduced fraud and crimes, compliance with regulations, but also challenges and costs. Proper planning, perpetration, and operation are pivotal to insure that the biometric system delivers the intended results and benefits for the petrol pump driver and guests.

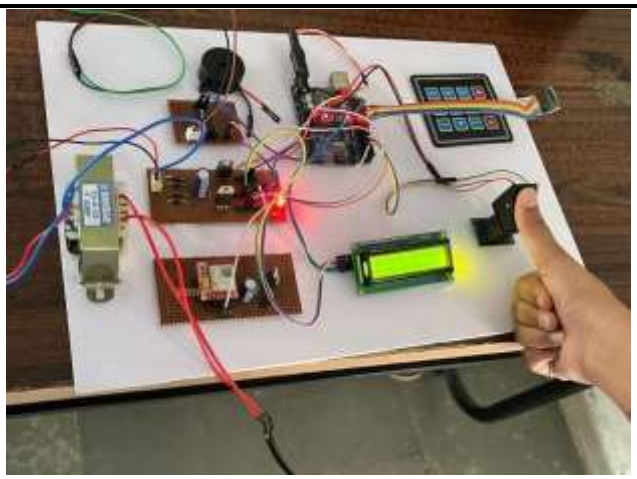

Figure 3. Prototype

Advantages

1. Man power is reduced due to automated self – service
2. Benefits to the petrol companies by maintaining the data of the costumers as well as the petrol consumption.
3. Due to use of finger print technology robbery of the fuel prevented.
4. Accuracy in the amount of petrol filling.

Applications

1.Improved security

2. Faster transactions

3.Better tracking and monitoring

4.Customization of services

5.Contactless services

VI. Conclusion

In conclusion, an automatic petrol pump using biometric authentication offers several advantages, including increased security, faster transactions, improved tracking, and personalized services. These benefits can enhance the customer experience and improve the profitability of petrol pump businesses. Overall, biometric authentication technology has the potential to revolutionize the petrol pump industry, making it more efficient and convenient for customers while also increasing revenue for business owners.

VII. Future scope

The future scope for automatic petrol pumps using biometric authentication include integrating biometric payments, utilizing advanced sensors for predictive maintenance, incorporating artificial intelligence for optimizing inventory levels and personalizing services, remote management capabilities, and integration with electric vehicle charging. These advancements can enhance efficiency, reliability, and customer experience, resulting in increased profitability and convenience for customers

REFERENCES

1.Edward, "A research using remote monitoring technology for pump output monitoring in distributed fuel stations in Nigeria," International Journal of Advances in Engineering & Technology, vol. 6, no. 6, pp. 2408-2415, January 2014

2. Fawzi Mohammed Munir Al-Naima and Mohammad M Hasan, “Design and implementation of RFID Based fuel dispensing system”, Research gate publication, September 2015.

3. P. Anjali, G. Navya Jyothi, and Yalabaka Srikanth, “Self Service Automated Petrol Pump Using Fingerprint Based RFID Technology”, Journal of Mechanics of continua and mathematical sciences”, Vol.-15, No.-6, June (2020) pp 82- 88

4. S. Ponmalar, K. Bhuvaneswari, and S. Preethi, “RFID based Petrol Pump Automation System, International Research Journal of Engineering and Technology (IRJET), Volume: 07 Issue: 02 | Feb 2020.

5. R Deepa, Roshni A Ramesan, Navya V, Rajesh Kumar Choudhary, Vivek Hegde, “Automated Petrol Bunk”, JETIR May 2019, Volume 6, Issue 5, 2019

6. Sudeshna Dutta, Smarajit Pal, Subhankar Majumder, and Mrs.Pratyusha Biswas Deb, “SELF SERVICE
PETROL PUMP USING AUTOMATION TECHNOLOGY”, I3SET2K19: INTERNATIONAL CONFERENCE ON INDUSTRY INTERACTIVE INNOVATIONS IN SCIENCE, ENGINEERING, AND TECHNOLOGY 3.

7. Gandha Dhairya P, Dr. Tejas, V.Shah, and Dr. Deepali H. shah, “RFID based fuel station using Arduino UNO”, International journal of creative research thoughts, Vol 8, Issue 10, October 10, 2020.