iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.52655

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

Fuel Delivery Application

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Abstract: ***The growing concern and importance of fuel assistance in the transportation sector have led to the development of an online platform called Fuel Delivery Application. This Android platform aims to provide a safe, reliable, and efficient delivery service for gasoline and diesel to users vehicles, whether they are in urban or rural settings. The application utilizes the GPS sensor of mobile devices to determine the user's location and employs the K-Nearest Neighbour (KNN) algorithm, a popular machine learning algorithm, to find the nearest petrol pump.***

When a user finds themselves stranded on the road due to a lack of fuel, the Fuel Delivery Application becomes a crucial service to rely on. Instead of worrying about finding a nearby petrol pump, users can simply use the application to request the desired fuel to be delivered to their location. The system ensures that the real cost of the fuel is charged, and additional fuel delivery fees are added accordingly.

By combining the convenience of GPS technology with the efficiency of the KNN algorithm, the Fuel Delivery Application addresses the global issue of fuel transportation effectively. It provides a seamless solution for users to receive the fuel they need, regardless of their location, promoting the overall development of the country's transportation infrastructure.

Keywords: GPS, Machine Learning, KNN algorithm, Android

I. INTRODUCTION

Automated vehicles have become an integral part of our daily lives, serving as mechanical devices designed to transport people and goods. From wagons, bicycles, motorcycles, and automobiles to trucks, buses, rail vehicles, watercraft, amphibious vehicles, aircraft, and even spacecraft, vehicles encompass a wide range of modes of transportation. To power these vehicles, fuel plays a crucial role. Fuel refers to any chemical substance that can undergo reactions with other substances to produce heat energy or perform work. Heat engines are devices that convert the heat energy generated by these chemical reactions in fuel into mechanical energy, which propels the vehicle. In our project, we focus on providing emergency petrol or diesel delivery, as our vehicles heavily rely on these fuels for operation. It is not uncommon for individuals to find themselves stranded on the side of the road due to a lack of fuel or diesel. This situation often leads to delays in their activities and work. To address this issue, we aim to offer a location based service to our clients. By leveraging this service, individuals can easily locate nearby petrol pumps or diesel stations for refueling. The time required for gasoline or diesel delivery will vary based on the distance between the consumer and the petrol pump. By implementing this location based service, we aim to minimize the inconvenience caused by fuel shortages and ensure that individuals can access the necessary fuel efficiently. This, in turn, helps to reduce delays and disruptions in their daily activities and work.

II. PREVIOUS SEARCH

In previous chapter, we discussed need and importance of Fuel delivery App. This chapter gives better insights into the project through the analysis done on various research papers related to Fuel and its Android Application.

GPS technology is an excellent tool for tracking Location. By utilizing GPS, Delivery boy can accurately pinpoint the location of their customer User through the coordinates displayed in the application. We aim to develop an innovative application and tool that will provide Emergency petrol or diesel delivery when someone is stuck on the road due to no Fuel. In our system we are going to provide a Fuel service to the customer by searching nearest petrol pump. The delivery time of the Fuel change according to the distance of the customer and petrol pump.

1) Critical Literature review based on Improving Coal Mill Fuel Delivery Stephen Tyrrell, Kevin Guay discuss the replacement of a hydraulically operated triple gate valve with a pneumatically operated double gate valve acting as the inlet feed airlock to the cement coal mill. Implementing this change provides the cement plant production department with the reliability needed for fuel delivery. They discuss technical details of the project including the issues experienced with the triple gate valve that lead to the replacement project, the specification of a double gate valve replacement, the installation details, commissioning, and a discussion of the reliability increase The results can be viewed in terms of the number of person hours required to keep the

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valves running from both the maintenance and production teams and directly from the process performance measurements. The improvement of person hours required to maintain operation of the valve has proven to be significant. Prior to the change to the new system, the plant recorded a yearly average investment of 50 hours of production time and 50 hours of maintenance time directly related to cleaning and repairing the triple valve. With the new double valve system, it has not required any significant cleaning or repair. This provides the plant with assurance the fuel delivery system will operate as needed citeb1

2) Critical Literature review based on fuel efficient driving feedback for fleet vehicles Dumidu Wijayasekara, Milos Manic, David Gertman discuss the transportation sector's reliance on fossil fuels has prompted a substantial amount of study into vehicle fuel efficiency. There are three basic strategies for increasing vehicle fuel efficiency: 1) advances to vehicle technology, such as drive trains, 2) improvements to traffic infrastructure, such as traffic flow management and route selection, and 3) changes in driver behaviour, such as acceleration and deceleration profiles. Driver behaviour change is the cheapest and fastest of the three approaches to deploy. As a result, this article proposes a fleet-specific identification and feedback architecture for fuel-efficient driving behaviour. The approach given here takes previous data from fleet drivers on specified routes and develops fuel-optimal velocity profiles with no impact on trip time. A low-cost plug-and-play type unobtrusive display prompts the driver with the identified velocity profile. The display instructs drivers on how to drive at a more fuel-efficient speed using an intuitive and easy-to-understand depiction. The proposed architecture was tested in real-world driving conditions on the Idaho National Laboratory (INL) bus fleet, and it was proven to boost fuel economy by 9% and 20% in two separate driving scenarios.

3) Critical Literature review based on Intelligent LBS using Android with GPS and Geo-Tagging Applications Sudhir K. Tiwari, Gaurav K. Varshney, Mohammed A. Qadeer, M. Sarosh Umar discussed that Android application provides an online service to store the information about services provided by any individual person or an organization and then display it to the users who want to use it. It allows users to search the services from a categorical list. After selecting a particular category it will display the name of all organization or person that are providing that service, after selecting any individual name it will provide all useful information about it. It also provide a path from user's current location to location of that service. The Global Positioning System (GPS) is a satellite-based navigation system. It is made up of a network of 24 satellites placed into orbit such that all portion of earth cover completely. It is developed by U.S Department of Defense. In 1980 the U.S Government made the system available for civilian use. The system provides critical capabilities to military, civil and commercial purposes. It becomes fully operational in late 1995.

4) Critical Literature review based on Application Development Research Based on Android Platform SHAO Guohong1 stated that android is an open and free operating system based on Linux, which is mainly used for mobile terminals, such as smart phones and panel computer. It is developed by Open Handset Alliance composed of more than 30 technology companies and mobile phone companies. Android tries to allow users experience the best service quality, and allow developers get a more open level for more convenient software developing. Thus mobile applications with more convenient functions can be developed via Android. This paper firstly presents the architecture of Android platform, including the classes and methods in developing. Then we takes audio/video file procurement as an example to introduce the Android program design and development, including classes application, program design, development and analysis.Android is developed by Open Handset Alliance composed of more than 30 technology companies and mobile phone companies including Google, HTC, TMobile, Qualcomm, Motorola, Samsung, China Mobile and LG. Open Handset Alliance states that Android platform can promote the mobile devices innovation to allow users experience the best service quality. Also, developers will get a new open level for more convenient synergistic effect, ensuring the development speed of new mobile devices. Therefore, Android is the first complete, open and free mobile phone platform.

III. PROPOSED IDEA

We have made a Fuel Delivery application that is very useful for user stuck without no fuel. Our 'Fuelify' application has many useful features for users, especially for those who need fuel urgently. So our app 'Fuelify' provides information of nearest petrol pump, charges of Fuel, and provide the delivery accordingly. Here for the interactive user interface, we have used Java and Kotlin language and also we use Android Studio so it can run Android.

A. Finding Nearest Petrol Pump

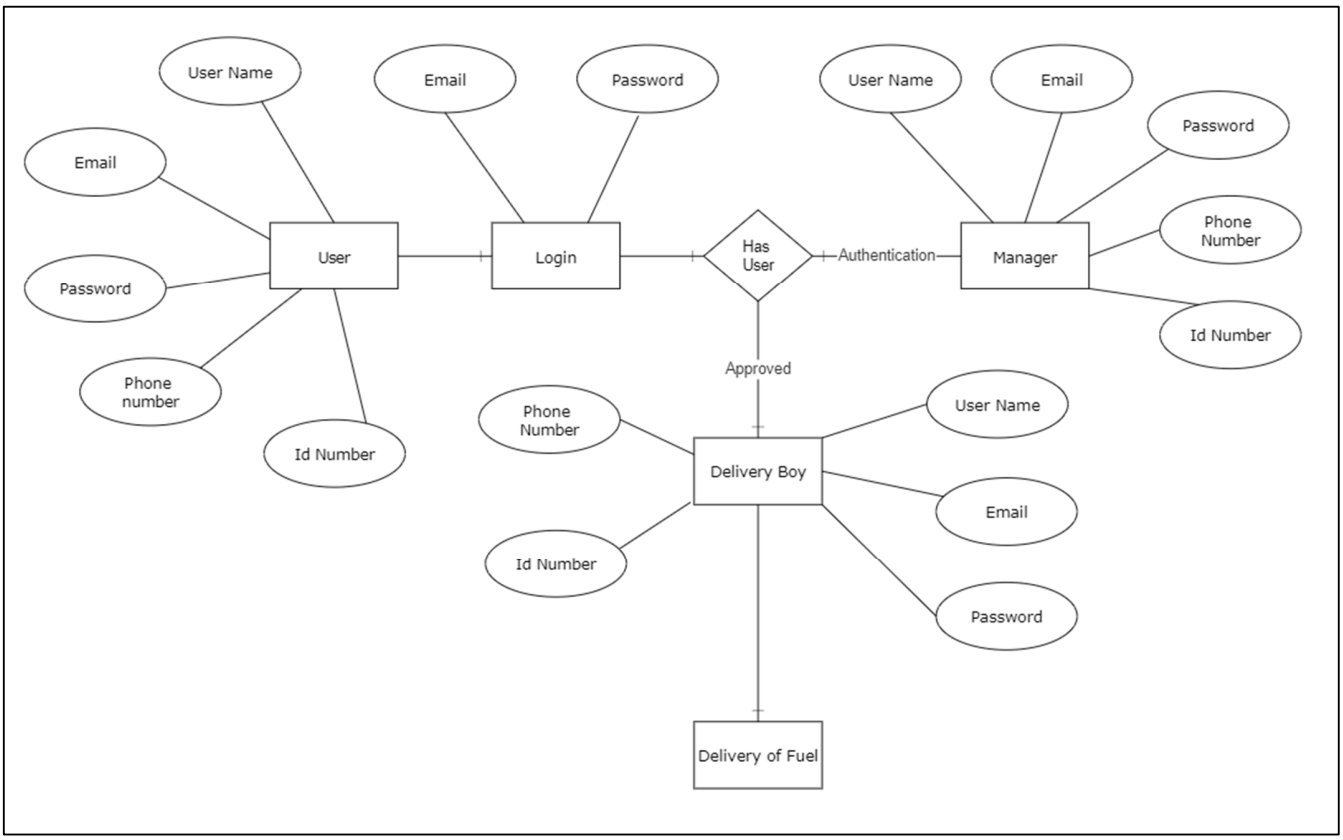
The main goal of our application is to find the nearest petrol pump for the user stuck without fuel. It also minimizes the user effort to visit petrol pump with empty fuel tank. For tracking user we use GPS Technology. GPS sends the location of the user to our delivery boy. nearest petrol pump can be found by using machine learning algorithm called 'KNN'. So the user can easily find the nearby petrol pump.

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B. Placing order

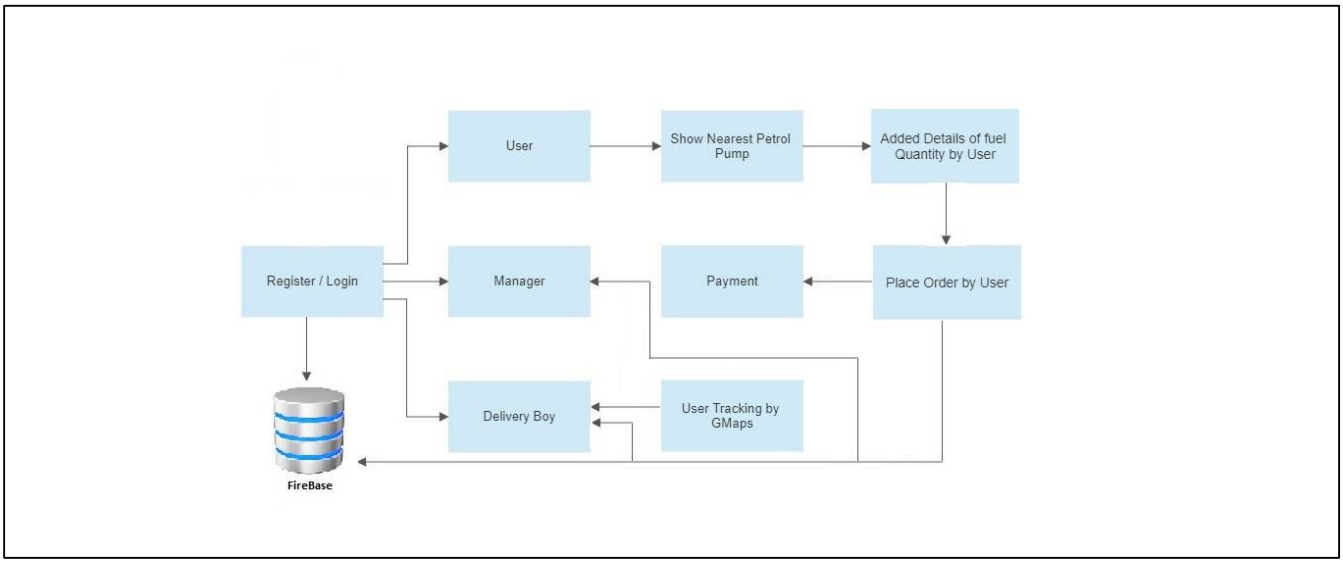
As soon as the user finds the nearest petrol pump. he can immediately place the order of the fuel by entering the Quantity of the fuel in litres and by paying and placing order he can get the fuel with its actual price including additional delivery charges

C. Entity Relationship Diagram



Given is the Entity Relationship diagram of the Fuel Delivery application. Users who want to use the Fuel Delivery application must register first before using the application.

D. Architecture



The figure shows the architecture of our project. All the data from the registration of the user is store in the Firebase. Then the information is transmitted from the Firebase to our app.

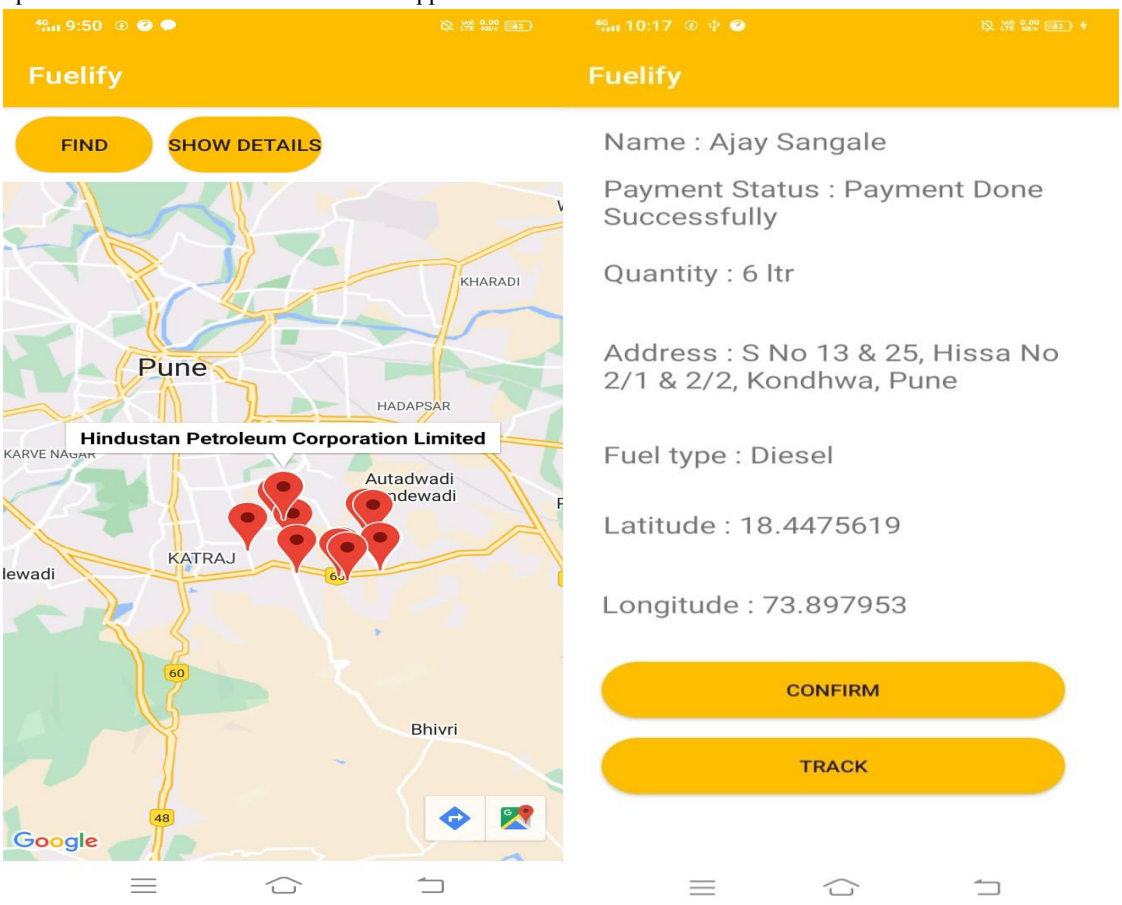
1) *Registration:* If a user need fuel, he or she must first register and enter the necessary information.
2) *Login:* User must login with valid email and password.
3) *Find a Petrol Pump Near You:* Our system looks for a Petrol Pump that is close to the user.
4) Make an Order: He or she can make an order based on their needs.
5) *Assign Order to Delivery Boy:* This is the person who provided the Fuel to the user.
6) *Customer Delivery:* Customers receive fuel according on their needs.

E. GPS Sensor in mobile device

An inbuilt GPS, or Global Positioning System, is a feature found in many modern mobile devices such as smartphones and tablets. It enables these devices to accurately determine their location on Earth's surface. By receiving signals from GPS satellites, the inbuilt GPS calculates latitude, longitude, altitude, and sometimes even speed and direction. This functionality enables a wide range of location-based services and applications, including navigation, mapping, fitness tracking, and geo-tagging. Inbuilt GPS relies on a constellation of satellites orbiting the Earth, constantly transmitting signals with positional data. The accuracy of inbuilt GPS can vary based on factors like satellite visibility, signal quality, and environmental conditions. Some devices also support Assisted GPS (A-GPS), which utilizes additional data sources to improve positioning performance. However, it's important to be mindful of power consumption when using GPS, as it can drain the device's battery faster. Privacy considerations should also be kept in mind when granting location permissions to apps utilizing GPS functionality. Overall, inbuilt GPS adds a valuable and versatile feature to mobile devices, enhancing their functionality and enabling a host of location-based applications.

IV. RESULT

The given output shows the information about our App.



V. CONCLUSION

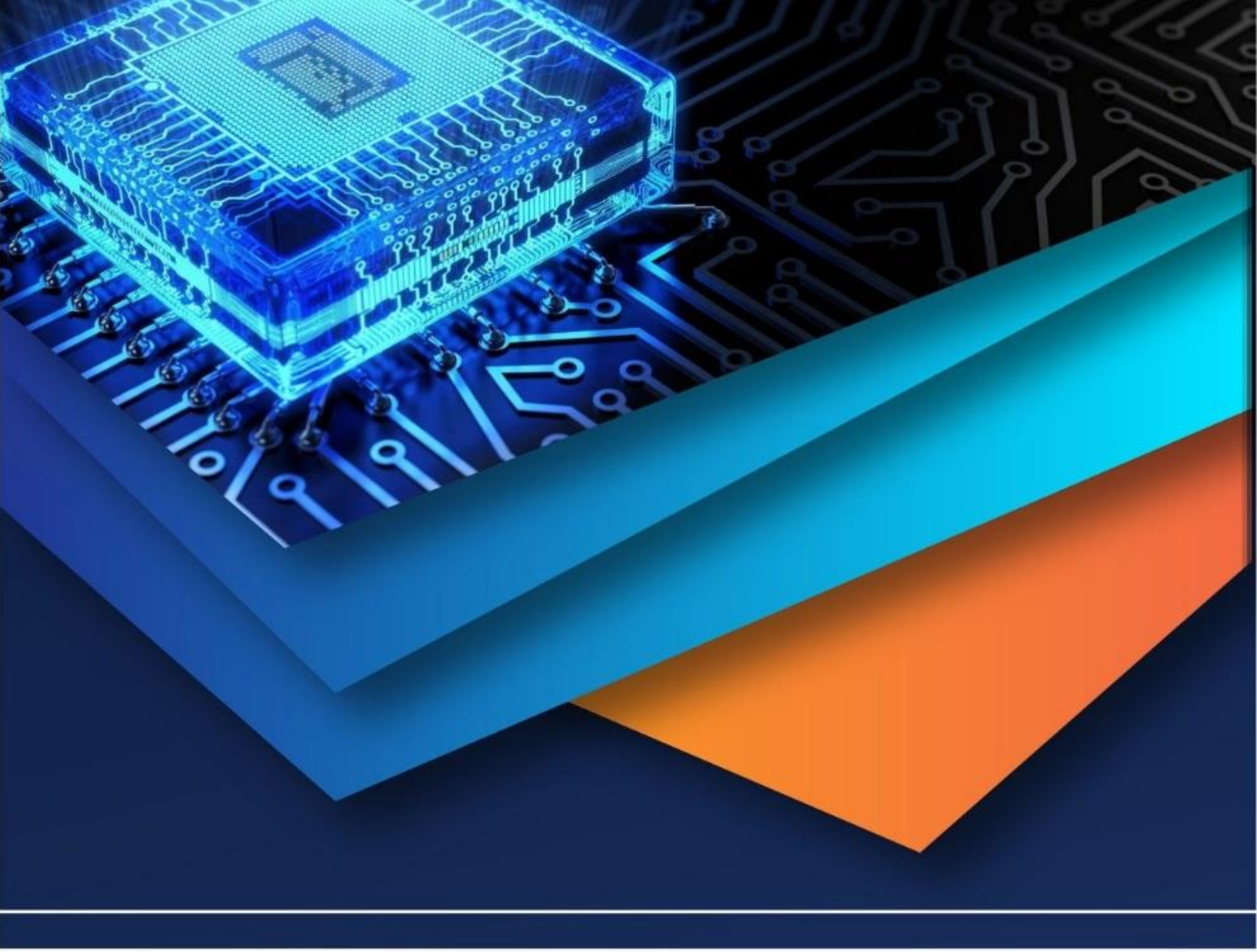
In conclusion, a fuel delivery application offers numerous benefits and convenience to both fuel providers and customers. By leveraging technology and connectivity, such an application streamlines the fuel delivery process, making it more efficient and user-friendly.

Customers are benefited from the convenience and time savings provided by a fuel delivery application. They can request fuel delivery directly to their preferred location without the need to visit a physical gas station. This is particularly beneficial for individuals and businesses with busy schedules, remote locations, or limited access to gas stations. Overall, a fuel delivery application revolutionizes the way fuel is supplied and consumed. It enhances operational efficiency for fuel providers, offers convenience and time savings for customers, and contributes to a more sustainable fuel delivery ecosystem. As technology continues to advance, we can expect further innovation and improvements in fuel delivery applications, making the process even more seamless and beneficial for all stakeholders involved.

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