



# ROADSIDE FUEL DELIVERY APPLICATION

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**Abstract :** The Road Side Fuel Delivery application provides an efficient way for vehicle users to interact with fuel stations, offering a seamless, efficient, and highly convenient method for ordering fuel, tracking delivery locations, and receiving fuel at the user's location. This innovative application leverages the GPS capabilities inherent in mobile devices to accurately determine the user's location, subsequently providing the nearby fuel stations and facilitating a streamlined process for fuel requests. In a situation where a vehicle runs out of fuel unexpectedly on the road, the Fuel Delivery application emerges as a critical and indispensable service. Traditionally, running out of fuel would necessitate a stressful search for the nearest petrol station, often involving significant inconvenience and delay. However, with this application, users can effortlessly request the fuel, which is then delivered directly to their current location. The application is designed to cater to a variety of user needs, whether in an urban setting or a remote area, the application allows the user to view nearby fuel stations that are being available near to his current location, thereby selecting a fuel station the user can request the fuel from their current location. Additionally, the Fuel Delivery application incorporates real-time tracking features, allowing users to monitor the progress of their fuel delivery in real time. This application's user-friendly interface further enhances the user experience, making it simple for anyone to use its features effectively.

**Keywords -** GPS, Nearby Fuel stations, Fuel Order, Mobile Application, Location Tracking.

## I. INTRODUCTION

The Road Side Fuel Delivery application is designed to offer a convenient solution for vehicle users to effectively manage their fuel needs. It provides users with the capability to view nearby registered fuel stations and their respective distances from the current location of the user. In a situation where there is an unexpected shortage of fuel, users can easily locate nearby fuel stations using the app and select their preferred station to place a fuel order. Once an order is placed, a SMS-based notification is sent to the designated agent at the chosen fuel station to manage and confirm the order. This application is developed to cater to diverse user environments, whether in urban areas or remote locations. It includes real-time tracking features that enable users to monitor the progress of their fuel delivery. Once the order is confirmed, the fuel is promptly delivered to the user's location to ensure efficient service. Additionally, the Fuel Demand Delivery application enhances user experience by providing timely SMS notifications. These notifications keep both users and agents informed about the status of fuel orders.

With its interface, the application ensures a straightforward and stress-free experience for all users involved. The Fuel Delivery app integrates robust technologies to ensure seamless operation. XML is used for structuring the app's user interface, providing a clear and organized layout that facilitates easy navigation. Java powers the app's functionality, enabling smooth interactions between users and the app's features. Firebase serves as the backbone for real-time database management, ensuring that data related to fuel orders and deliveries is updated promptly and accurately. By leveraging the Google Maps API, the application ensures accurate location services for seamless display and tracking of nearby fuel stations. It combines advanced technology with user-friendly design to offer a reliable and efficient solution for managing fuel needs, whether users are navigating through urban areas or exploring remote locations enhancing the overall user experience.

## II. EXISTING WORK

In the existing system, when a user's vehicle stops on the road due to a lack of fuel, they face several significant challenges. In some cases, users may need to rely on the assistance of passing motorists to reach a fuel station. However, these methods involve inefficient communication channels and limited accessibility, particularly for those in remote areas. Currently, the process of finding and accessing fuel in such situations is neither streamlined nor reliable. Users often have to use multiple tools and resources to identify the nearest fuel station, which can be time-consuming and stressful. Moreover, the existing options do not provide a clear and efficient way to communicate the specific needs and location of the user to the fuel provider. This lack of direct communication can lead to delays and miscommunication, further exacerbating the user's predicament. Additionally, the existing system does not leverage modern technology to provide real-time solutions and updates. Users cannot track the availability of fuel or the status of their request in real-time, leading to uncertainty. The absence of a centralized platform to handle these emergencies means users have to navigate a fragmented and inefficient process to obtain fuel. There

is a clear need for an innovative solution that leverages modern technology to provide a more efficient, reliable, and safe method for users to obtain fuel when stranded on the road.

### DISADVANTAGES

The disadvantages of the existing system include the following:

- **Limited Accessibility:** In the existing system, users often face challenges accessing fuel stations, particularly in remote or distant locations. This limited accessibility can result in significant inconvenience, especially when traveling in areas with sparse fuel station coverage.
- **Inconvenience during Emergencies:** When a vehicle runs out of fuel unexpectedly, users are left stranded on the road, facing inconvenience and potential safety risks. Locating and traveling to the nearest fuel station becomes a priority, but the process can be time-consuming and stressful, especially in unfamiliar areas or during adverse weather conditions.
- **Dependency on External Assistance:** In some cases, users may rely on the assistance of other travelers or passersby to reach a fuel station. This dependency introduces uncertainties and delays, as users must wait for someone willing to help or coordinate alternative transportation arrangements.
- **Communication Challenges:** Existing communication channels for seeking assistance, such as asking for help from other travelers or contacting roadside assistance services, can be inefficient and unreliable. Users may struggle to convey their exact location or fuel needs, leading to delays and misunderstandings.

### III. PROPOSED WORK

The proposed work for Road Side Fuel Delivery application introduces a solution to the traditional method of refueling vehicles. This application aims to streamline the process by facilitating fuel delivery directly to the user's location, thus eliminating the need for users to travel to a fuel station. The application serves as a platform for efficient communication between users and fuel service providers. Through this platform, users can easily place orders for fuel, specifying their location. This streamlined communication process minimizes the need for manual intervention and ensures that orders are accurately processed and fulfilled in a timely manner. By leveraging modern technology, such as mobile devices and internet connectivity, the application offers users a convenient and hassle-free way to access fuel services. One of the key features of the proposed system is its ability to facilitate fuel order placement with ease. Users can simply open the application, specify their current location using GPS technology, and place an order for fuel delivery. Location-based services play a crucial role in the functionality of the application. By leveraging GPS technology, the application can accurately determine the user's current location and identify nearby fuel stations. Real-time tracking is another key feature of the proposed system, allowing users to monitor the status of their fuel delivery in real-time. Once an order is placed, users can track the location of the delivery agent. Likewise, fuel service providers can use real-time tracking to optimize their delivery operations and ensure timely fulfillment of orders.

### ADVANTAGES

In the evolving landscape of transportation and fuel consumption, innovative solutions are crucial to meet the demands of modern consumers. The proposed Fuel Delivery application presents an approach to refueling vehicles, offering convenience and efficiency like never before. This system leverages technology to streamline the fuel delivery process, providing numerous advantages over traditional methods.

- **Facilitated Communication:** The cornerstone of the Fuel Delivery application is its seamless communication capabilities. Through the app, users can effortlessly connect with fuel suppliers. This direct line of communication ensures prompt responses to inquiries and enables efficient coordination between users and fuel providers.
- **View Nearby Fuel Stations:** By enabling the location of the user while using this app. User can view a list of nearest fuel stations that are being available within the distance of 10 kms, in which user can select the nearest fuel station with less distance.
- **Fuel Order Placement:** With the Fuel Delivery app, users can place fuel orders with just a few taps on their smartphones. Whether at home, work, or on the road, customers have the flexibility to request fuel delivery to their location, minimizing disruptions to their daily routines.
- **Location-Based Services:** The power of geolocation technology, the Fuel Demand Delivery app offers personalized services tailored to each user's location. By pinpointing the exact location of vehicle user in need of refueling, suppliers can optimize their delivery routes. This ensures timely and reliable service, regardless of whether the user is in city or a remote rural area.

## 3.1 SYSTEM ARCHITECTURE

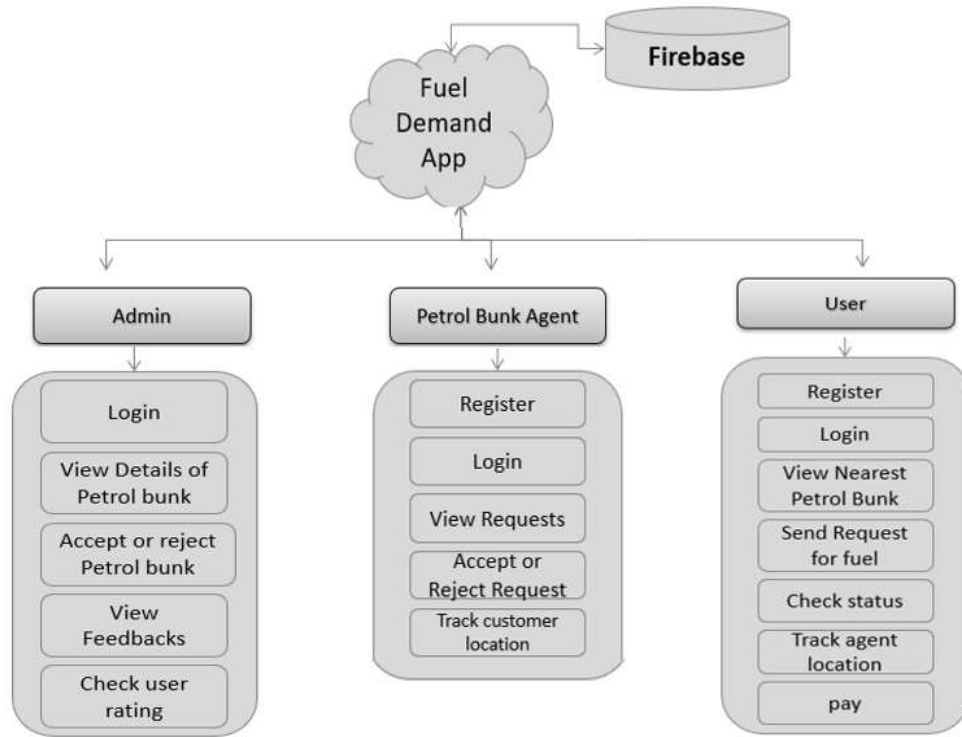


Figure 1: System Architecture

The diagram represents the architecture of an instant road side fuel delivery application, illustrating the interactions between three modules: Admin, User and petrol bunk agent and all interfacing with a data base called Firebase. Here is the overview of the modules and their interaction.

**MODULES**

**User Module:** The User Module of the Fuel Delivery application is designed to provide a comprehensive and user-friendly experience for vehicle owners needing fuel delivery services. It allows users to register for an account, securely log in, and access a variety of features aimed at enhancing their convenience. Upon registration and login, users can view nearby petrol stations within a 10km radius, ensuring that they can quickly find a fuel source when needed. The application also enables users to place orders for fuel delivery directly from these nearby petrol stations, making the process simple and efficient. Additionally, users can track their orders in real-time, offering peace of mind by allowing them to see the progress of their delivery. After receiving the service, users have the option to rate and review their experience, providing valuable feedback to improve the service quality.

**Admin Module:** The Admin Module is a critical component of the Fuel Delivery application. Admins have the ability to verify the trustworthiness of petrol stations, ensuring that only reliable and reputable stations are listed in the app by contacting the registered agent of that particular fuel station. This verification process is crucial for maintaining user trust and service quality. Admins can also manage station listings, by accepting and removing stations that do not meet the required standards. Monitoring user feedback is another key function of the Admin Module, allowing admin to address concerns and continuously improve the service. Overall, admin oversees the quality of service, ensuring that all aspects of the application function smoothly and effectively.

**Agent Module:** The Agent Module is designed to streamline the operations of petrol station agents, enabling them to efficiently manage user orders and station inventory. Agents can accept or reject fuel delivery orders based on availability and capacity, ensuring that they can fulfill requests without overextending their resources. The module also allows agents to manage their inventory, keeping track of fuel levels and other essential supplies. Communication is a key aspect of the Agent Module, providing agents with the tools to interact with both users and admins regarding order statuses and any issues that may arise. This ensures that all parties are informed and can coordinate effectively to deliver a high-quality service.

**Firestore:** Firestore Authentication can be used to implement user registration and login for all three user groups: Admins, Petrol Bunk Agents, and Users. It provides different methods for user sign-in, including email and password, social media logins, and phone number authentication. Firestore stores user data securely in the cloud. This data could include user profiles, preferences, and any other relevant information.



IV. EXPERIMENTAL RESULTS

Road Side Fuel Delivery App allows users to order fuel from a fuel station. The app opens with screen which has three sections: Admin, Fuel Station Agent, and User.

4.1 USER

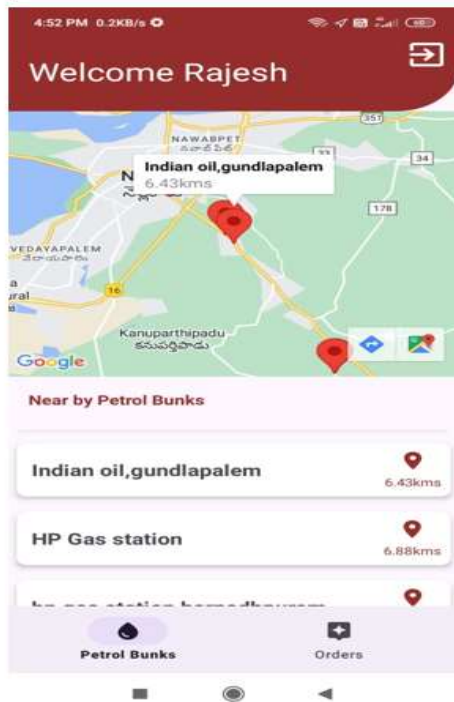


Fig:4.1.1 View Nearby fuel stations

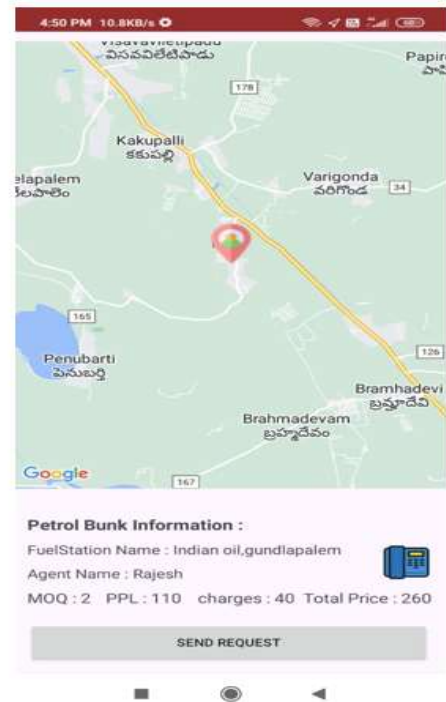


Fig:4.1.2 Make a fuel request

If the user registers and logs into the app by enabling the location the screen will be displayed as shown in figure 4.1.1 by showing the list of nearby fuel stations within 10km distance from the user location. Then, the user can select the nearest fuel station with less distance and can place order by clicking on that particular fuel station. By clicking on it it navigates to the screen as shown in figure 4.1.2 it shows the information of the fuel station and total price for fuel order. By clicking on the send request user can place the fuel order.

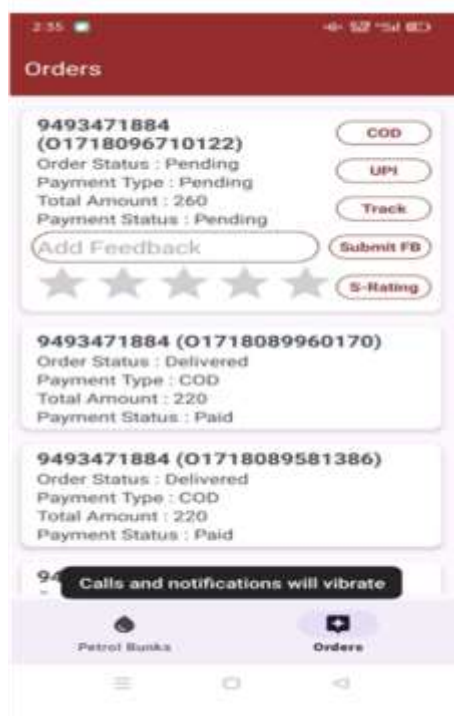


Fig:4.1.3 Request status Pending

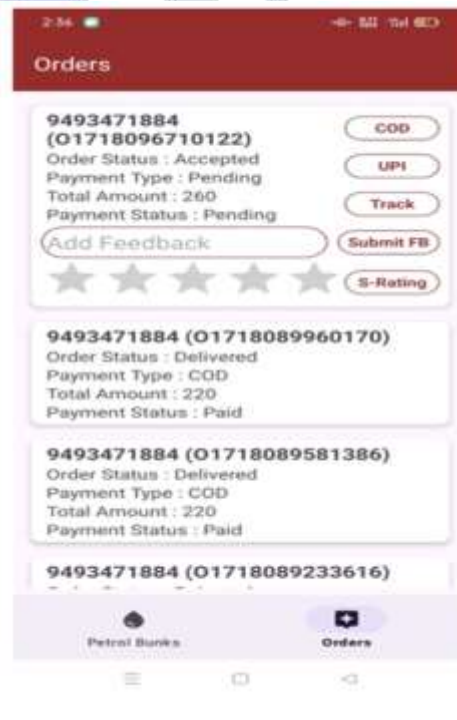


Fig:4.1.4 order status accepted

By clicking on the orders the screen will be displayed as shown in the figure 4.1.3 in which user can see he order status as pending, when the agent accepts the order the status will be displayed as the accepted as shown in the figure 4.1.4 and user can also select the payment type like cash on delivery by clicking on cod button and can submit the feedback and rating after receiving the order.

### 4.2 ADMIN

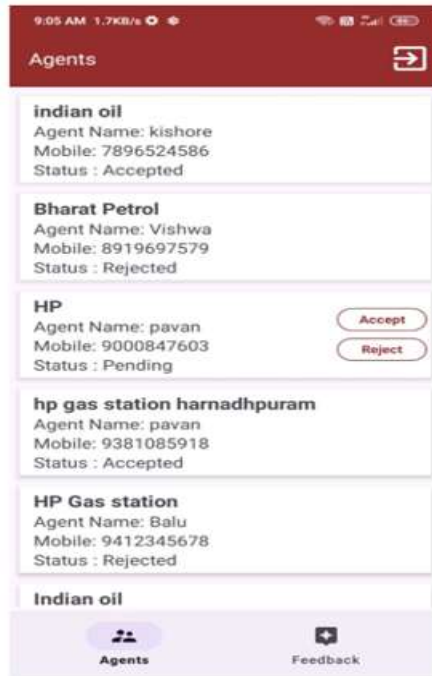


Fig:4.2.1 Admin Login



Fig:4.2.2 Views the agents

Admin can login by entering the valid username and password. After login the screen will be displayed as show in the figure 4.2.1, which shows list of registered agents. By contacting that particular agent admin can accept or reject the particular fuel station. If fuel station is accepted it will be displayed to user and if rejected by admin agent cannot login and not displayed to the user. By clicking on the feedback the screen will be displayed as shown in figure 4.2.2 in which admin can view the feedback and rating given by the user.

### 4.3 AGENT



Fig:4.3.1 Profile of the agent

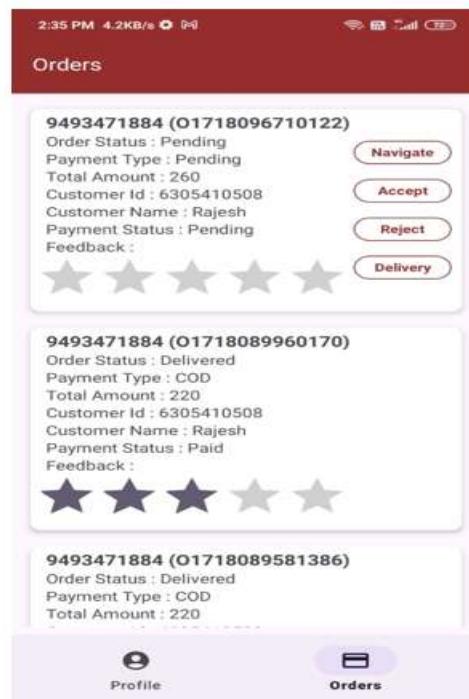


Fig:4.3.2 Orders for the agent

If an agent registers in the app and accepted by the admin. Agent can login into the app by entering the valid mobile number and password. After successful login the screen will be displayed as shown in the figure 4.3.1 providing the profile details of the agent in which he can update the price, order quantity. By clicking on the orders he can view the orders that has been placed by user for the agent. By clicking on the accept he can accept the order or else click reject button based on availability.

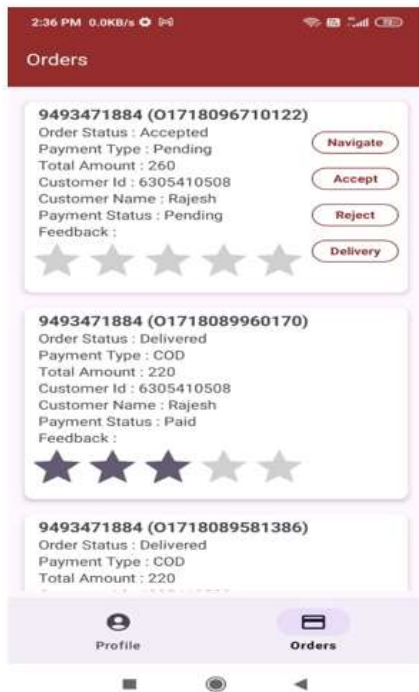


Fig:4.3.3 Order is accepted



Fig:4.3.4 Tracking the user location

If the agent accepts the order by clicking on the accept button the order status will be changed for both user and agent as shown in the figure 4.3.3. By clicking on navigate button the agent can track the location of the user for efficient delivery purpose. After providing the delivery agent can click the delivery button so that the order status will be changed to delivered.

## V. CONCLUSION

The Road Side Fuel Delivery App represents a paradigm shift in the traditional methods of fuel procurement and distribution. In an era where convenience and efficiency reign supreme, this app emerges as an innovation, offering a comprehensive solution to address the on-road fuel demands of modern consumers and businesses alike. Through its robust implementation of advanced technologies and user-centric features, the app has not only streamlined the fuel delivery process but has also ushered in a new era of convenience, reliability, and sustainability in the fuel industry. One of the cornerstones of the app's success lies in its utilization of GPS tracking technology. By harnessing the power of GPS, the app provides users with real-time visibility into the location of their fuel delivery vehicles, enabling them to track the progress of their orders with pinpoint accuracy. Whether it's a stranded motorist in need of a roadside refuel or a fleet manager coordinating fuel deliveries for a fleet of vehicles, the ability to track fuel shipments in real-time ensures timely and efficient delivery, thereby minimizing downtime and maximizing productivity. This level of responsiveness not only enhances user satisfaction but also reinforces the app's reputation as a reliable and dependable fuel delivery service provider. Furthermore, the app's secure payment systems offer users peace of mind when conducting transactions online.

## VI. FUTURE SCOPE

The scope for future work for the Fuel Delivery app involves several avenues that can further enhance its functionality and user experience without altering its core purpose. Firstly, incorporating scheduled deliveries can provide users with greater flexibility and control over when they receive fuel, catering to their specific preferences and schedules. This feature can be complemented by the ability to set preferences for automatic top-ups, ensuring that users never run out of fuel by proactively replenishing their supply when it dips below a certain level. Moreover, introducing pre-ordering options for fuel delivery within the app can streamline the process even further, allowing users to plan ahead and schedule deliveries at their convenience. This feature can be particularly useful for users with busy schedules or those who require fuel for specific events or occasions. In addition to these scheduling options, integrating predictive maintenance suggestions can enhance the app's utility by providing users with insights into the condition of their vehicles and recommending maintenance tasks or repairs to optimize performance and prolong the lifespan of their vehicles. This proactive approach to vehicle maintenance can save users time and money in the long run while ensuring their safety on the road.

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