



A Survey On Fuel Delivery Application - FLASHO

Mr.Krishna Gudi¹, Supriya K², Thanushree Nataraj³, Vidya M S⁴

Associate Professor, Dept of CSE, KSIT, Karnataka, India¹

Student, Dept of CSE, KSIT, Karnataka, India²

Student, Dept of CSE, KSIT, Karnataka, India³

Student, Dept of CSE, KSIT, Karnataka, India⁴

Abstract: FLASHO is a cutting-edge platform that enables on-demand fuel delivery for both corporate and individual customers. Customers can easily order fuel via a mobile application, and it will be delivered promptly to the location of their choice. To enhance the user experience, the platform makes use of secure payment methods, real-time notifications, and GPS technology for tracking.

FLASHO offers fleet management tools for businesses and drastically reduces waiting times and fuel waste by eliminating the need to visit gas stations. The platform is based on a cloud-based, scalable architecture that respects legal requirements, puts safety first, and encourages eco-friendly behavior. FLASHO's reliable, effective service is poised to revolutionize the fuel industry.

Keywords: Cloud-based platform, Safe payment methods, GPS technology, On-demand fuel delivery, Safety procedures, and Improved user experience.

I. INTRODUCTION

FLASHO is a fuel delivery platform that allows users to order gasoline or diesel and have it delivered straight to their desired location, revolutionizing the conventional fuel procurement process. FLASHO provides a practical, time-saving solution for both individuals and businesses by establishing a connection between fuel stations and end users. Users can choose fuel type, quantity, and delivery time through its user-friendly interface. They can also access secure payment options and receive real-time price updates.

The platform places a strong emphasis on efficiency and safety, using careful logistics planning to guarantee on-time delivery and compliance with stringent storage and transportation laws. Offering flexible delivery scheduling that blends in perfectly with everyday routines, FLASHO serves a wide range of clientele, including urban, rural, and commercial users. Reliability and transparency are fundamental values that increase client satisfaction and trust in each transaction.

Additionally, FLASHO fortifies alliances with nearby gas stations, allowing them to increase revenue streams and service reach. FLASHO offers a cutting-edge, effective substitute for conventional fueling techniques by assisting fuel suppliers and adapting to changing customer demands. Its innovative, safe, and convenient design makes it a game-changer in the fuel delivery sector.

II. LITERATURE REVIEW

1) Fuel Delivery on Demand Application^[1]:

This study examines the difficulties and annoyances that car owners face when obtaining fuel, particularly in emergency situations or in strange places. Conventional refueling techniques usually involve a trip to a gas station, which isn't always possible. The proposed study presents a clever on-demand fuel delivery application that makes use of modern digital technologies and real-time tracking in order to address this problem.

Customers can register, look up local fuel suppliers, place orders, and pay using the application's user-friendly interface—all from a smartphone or other internet-connected device. The three main modules of the system are Admin, Fuel Station, and User. While fuel stations can monitor their inventory and reply to customer inquiries, users can access services and manage their orders. The administrator is in charge of managing the fuel stations' registration and regulation.



Among the noteworthy features are secure payment options, GPS-based delivery tracking, and route planning that minimizes needless travel and fuel shortages. In the end, the platform functions as an effective, technologically advanced substitute for conventional fueling techniques.

2) Vehicle Routing Problem Approach for Improving Fuel Delivery^[2]:

This study examines the difficulties in obtaining conventional fuel, especially in situations where access is restricted, like in remote locations or during emergencies. Customers usually have to make the trip to fuel stations, which isn't always possible. The study suggests an e-commerce-enabled web application that enables online fuel ordering and doorstep delivery in order to get around these restrictions.

The suggested system is designed to offer a smooth, safe, and easy-to-use experience. Essential features like integrated secure payment gateways, real-time GPS tracking of deliveries, and an easy-to-use interface are all included. Any internet-connected device, such as desktop computers, tablets, or smartphones, can be used to access the platform.

Three main modules comprise the application architecture: secure transaction handling, real-time delivery tracking, and a user dashboard. Users can effectively manage their profiles, place fuel orders, and track the status of deliveries using this interface. Additionally, the system facilitates real-time updates and automated alerts, enhancing operational dependability and service transparency. A digital transaction history is also kept for record-keeping and user convenience.

The research intends to revolutionize the way consumers obtain fuel by putting this technology-driven fuel delivery solution into practice, providing a quicker, safer, and more practical substitute for conventional approaches.

3) Android Application for On-road Fuel Delivery^[4]:

This study presents a novel, technologically advanced approach to improving the fuel delivery procedure by creating an effective and responsive web application. Conventional refueling techniques frequently necessitate people to visit gas stations, which can be inconvenient and time-consuming, particularly during emergencies or busy times. The suggested browser-based platform provides a contemporary, on-demand substitute by enabling users to order fuel straight to their location, thereby resolving these problems.

For smooth user interaction, the application has a simple, interactive interface. Secure payment integration, live delivery tracking, and real-time fuel ordering are important features. Features like order management, payment gateway support, user registration and authentication, and real-time delivery tracking are all part of its modular system architecture. Together, these modules give the user a seamless and integrated experience.

The platform guarantees fast loading times, user-friendly navigation, and accessibility for a wide range of devices, including desktops, tablets, and smartphones. Strong security measures are also put in place to safeguard user data, including secure login procedures and encrypted data transfer. This system reinvents traditional fuel procurement by leveraging contemporary web technologies, providing a more dependable, secure, and convenient service that is suited to the demands of today's hectic lives.

4) On-road Fuel Supply Application^[3]:

In order to meet the rising demand for fuel brought on by the growing number of cars, this study suggests a web-based application for on-demand fuel supplies. Customers can place on-demand fuel orders through the application, guaranteeing a smooth and effective fuel delivery process.

Customers can order fuel, track deliveries, and safely make payments thanks to the application's integrated, powerful, and interactive user interface. Secure transactions, optimal performance, and real-time order updates are all guaranteed by the system.

Utilizing web technologies, our on-road fuel supply application seeks to revolutionize the fuel delivery experience by offering vehicle owners a convenient, dependable, and effective solution. It consists of three main modules:

1. User Module: lets users create accounts, place fuel orders, and track deliveries;
2. Fuel Station Module: lets gas station owners manage their stations and track orders; and
3. Admin Module: gives administrators access to manage and modify all aspects of the application.



III. OBJECTIVES

- 1) **Improve Convenience:** To provide a rapid and easy substitute for conventional refueling techniques by delivering fuel straight to customers' locations.
- 2) **Maintain Operational Safety:** To adhere to strict safety regulations when handling, transporting, and delivering fuel.
- 3) **Improve Delivery Efficiency:** To streamline the logistics process, aiming to lower delivery costs and minimize fuel waste.
- 4) **Develop an Intuitive Platform:** To create an easy-to-navigate application that simplifies the process of placing and managing fuel orders.
- 5) **Optimize Client Satisfaction:** To deliver prompt, reliable, stress-free services that continuously satisfy client needs.
- 6) **Expand Service Accessibility:** Increase overall coverage to enable fuel delivery services in both urban and rural areas.
- 7) **Support Emergencies:** To provide timely and dependable fuel delivery in unexpected or urgent circumstances, guaranteeing continuous access when it's most needed.

IV. IMPLEMENTATION

From obtaining user location to handling payments, the "Fuel Booking and Delivery System" implementation consists of several parts. An outline of the primary system elements, such as data processing, user interfaces, and external service integration, is provided below.

A. User Flow:

The path users take when utilizing the FLASHO fuel delivery platform is depicted in the user flow diagram. From registering or logging in to placing an order, paying for it, and monitoring order history, it delineates the main pages and functions a user encounters. Customers are guaranteed clarity and ease of use thanks to this organized flow, which also reduces ordering process friction and provides a seamless, user-friendly experience.

User Flow Diagram

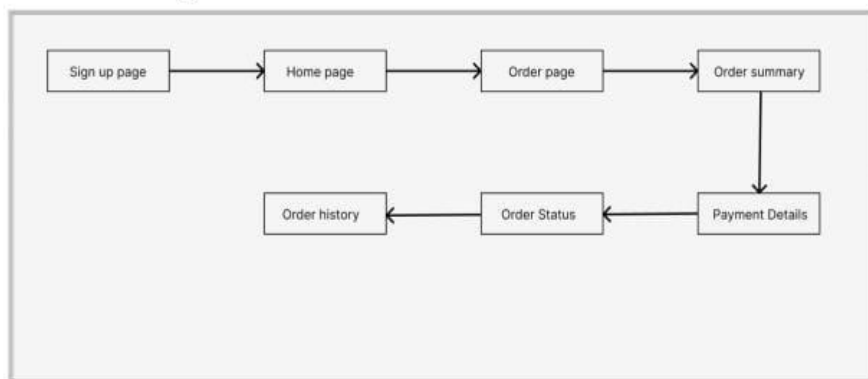


Fig 1: User Flow Diagram

B. User Location and Fuel Station Detection:

Finding nearby gas stations using the Google Maps API and getting the user's location is the first step.

This includes:

1. **Location Fetching:** The system obtains the user's latitude and longitude by using the browser's Geolocation API.
2. **Fetching Nearby Stations:** To obtain a list of nearby gas stations, the coordinates are transmitted to the Google Maps Places API. After processing, the user is presented with information such as the estimated delivery time and distance.

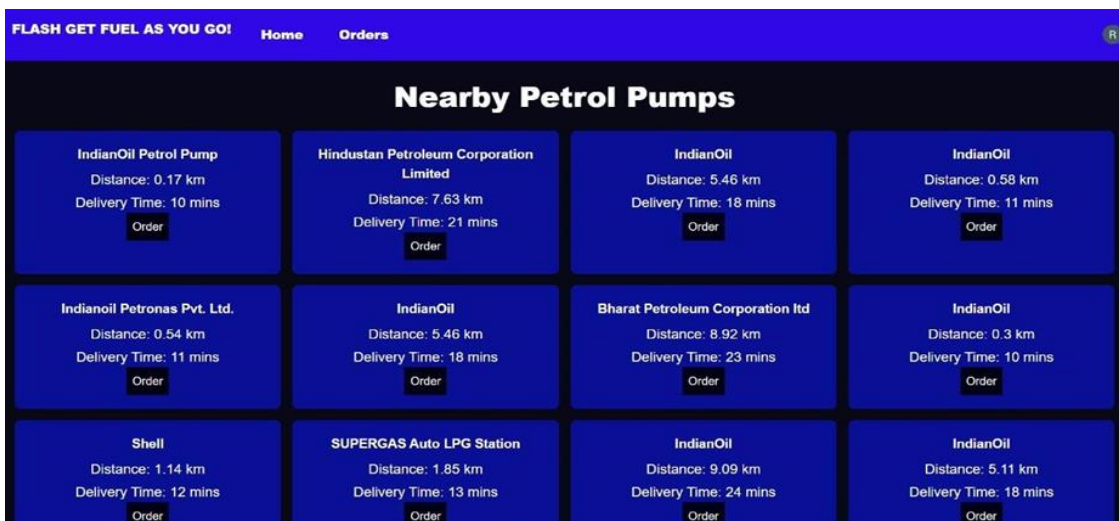


Fig 2: Nearby fuel station

C. User Interface(UI):

React.js and Next.js are used to implement the frontend, guaranteeing a dynamic, responsive, and server-side-rendered application. Important characteristics include:

1. Station Listing: Shows a grid of fuel stations in the area along with information about their names, locations, and delivery times.
2. Interactive Buttons: These buttons let users view more stations or place orders. Tailwind CSS was used to style the responsive design, which guarantees a consistent experience on all devices.

D. Backend APIs:

Node.js and Express.js are used in the backend's construction, exposing RESTful endpoints to manage a variety of tasks:

1. Order management: involves retrieving, creating, and updating fuel orders.
2. Payment Processing: Enables safe payment processing by integrating with the Stripe API.
3. Station Data: Provides information about gas stations, such as their costs and availability.

E. Payment Processing:

For safe transactions, the system incorporates Stripe as the payment gateway. It consists of :

1. Payment Initialization: Payment information is gathered by the frontend and sent to the backend.
2. Stripe Integration: To manage transactions and maintain PCI compliance, the backend interacts with the Stripe API.

F. Key Functionalities:

1. Order Summary and Confirmation: Customers are provided with an order summary that includes information on the type of fuel, quantity, cost, and anticipated time of delivery.
2. Dynamic Station Selection: Customers can choose a fuel station from the list and make a reservation right away.
3. Real-time updates are guaranteed thanks to integration with the Google Maps API, which guarantees that distances and nearby stations are updated instantly.

G. Evaluation and Testing:

The system is tested for performance and functionality after it is put into use:

1. Accuracy: Verifying the distance and delivery time estimates.
2. Payment Workflow: Making sure that payments are handled securely by the Stripe integration.
3. UI testing: Confirming user interactions and responsiveness on various devices.



V. CONCLUSION

In the quest for dependable, effective, and user-friendly fuel delivery services, the creation and testing of the platform represents a significant turning point. By providing a simplified, technologically advanced method of ordering fuel, the platform has shown during its testing phase that it has the potential to revolutionize how consumers engage with fuel delivery systems. The testing phase's outcomes have given the development team important information about the platform's advantages and shortcomings, enabling them to solve major issues and enhance functionality for upcoming iterations.

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