

CNG – GPS Tracking and Booking using AI

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Abstract: This project introduces a CNG GPS Tracking and Booking System powered by Artificial Intelligence (AI), designed to minimize waiting times and enhance the efficiency of the CNG refueling process. The system offers a web-based platform where users can conveniently book CNG refueling appointments in advance, thereby reducing idle time and improving overall user experience. By integrating AI, GPS technology, and real-time data analytics, users can easily locate nearby CNG stations, check fuel availability, reserve time slots, and receive timely notifications.

Additionally, pump owners benefit from an intuitive admin dashboard, enabling them to manage resources, monitor refueling operations, and optimize service delivery through AI-driven insights. This solution modernizes the traditional CNG refueling system by introducing predictive analytics and automation, significantly streamlining operations and reducing congestion at refueling stations.

IndexTerms - Image Processing, Text Overlay, Dynamic Video Creation, OpenCV, Video Animation, Digital Content Creation, Python Programming, Visual Effects, Generative Adversarial Networks (GANs), Long Short-Term Memory (LSTM) Networks, Multimedia Content Generation, Video Synthesis Natural Language Processing (NLP).

I. INTRODUCTION

This project introduces a CNG GPS Tracking and Booking System powered by Artificial Intelligence (AI), designed to minimize waiting times and enhance the efficiency of the CNG refueling process. The system offers a web-based platform where users can conveniently book CNG refueling appointments in advance, thereby reducing idle time and improving overall user experience. By integrating AI, GPS technology, and real-time data analytics, users can easily locate nearby CNG stations, check fuel availability, reserve time slots, and receive timely notifications.

Additionally, pump owners benefit from an intuitive admin dashboard, enabling them to manage resources, monitor refueling operations, and optimize service delivery through AI-driven insights. This solution modernizes the traditional CNG refueling system by introducing predictive analytics and automation, significantly streamlining operations and reducing congestion at refueling stations.

With the increasing shift toward eco-friendly alternatives, Compressed Natural Gas (CNG) has become a preferred fuel choice due to its environmental benefits and cost-effectiveness. However, despite the growing adoption, users often face challenges such as long queues, unpredictable waiting times, and inefficient resource management at CNG stations. These issues not only cause inconvenience for customers but also create operational bottlenecks for station owners.

To address these challenges, this project proposes a Web-Based CNG GPS Tracking and Booking System powered by Artificial Intelligence (AI). The platform is designed to optimize the CNG refueling process by enabling users to pre-book refueling slots based on real-time station data and AI-driven recommendations. By integrating GPS functionality, users can easily locate nearby CNG stations, view live fuel availability, and book suitable time slots without having to wait in lengthy queues.

The system supports user and vendor registration, offering tailored dashboards for each. Users can manage their bookings, receive real-time updates via push notifications, and get AI-based time-slot suggestions to minimize waiting time. Vendors, on the other hand, can monitor station operations, manage fuel supply, track daily bookings, and use AI-powered demand forecasting to optimize service delivery and resource allocation.

Furthermore, advanced features like route optimization, traffic prediction, and dynamic booking management ensure a seamless and intelligent refueling experience. The integration of predictive analytics not only helps in reducing congestion at CNG stations but also enhances the overall efficiency of the fuel distribution network.

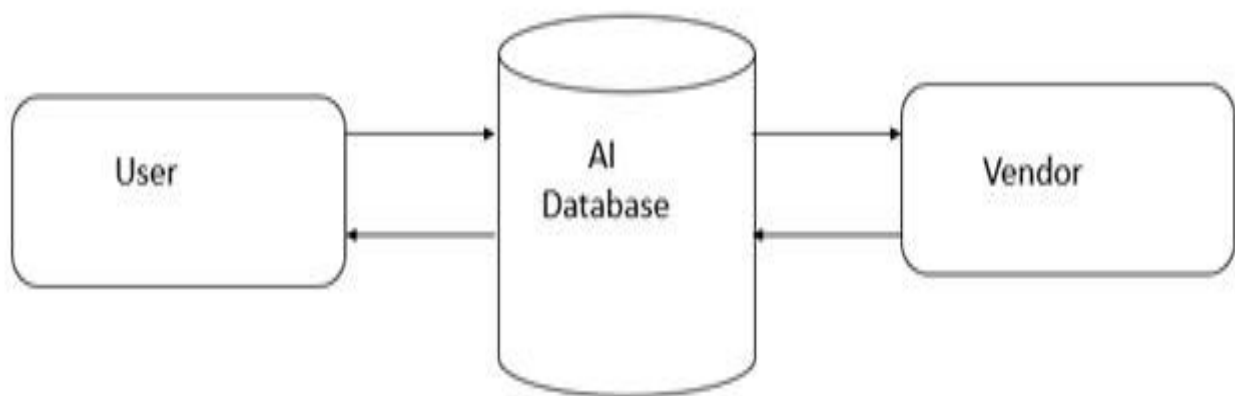
In essence, the CNG GPS Tracking and Booking System modernizes the traditional refueling process by leveraging cutting-edge technologies, aiming to deliver a smart, efficient, and user-friendly solution for both customers and CNG station operators.

II. LITERATURE REVIEW

Persis Jessintha J [1] the author has told us that by taking a fuel sensor and GPS tracker, they connect each other with the help of cloud and get information about the nearest fuel station through mobile. Ganesh Kadam, Saurabh Lanke, Kavita Suryawanshi [2] the author has given the information how to provide the connection sensor and gas tracker. Vaishnavi Shinde, Saloni Pawar, Purva Patel, Sakshi Ghorpade, Nilesh Wankhede [3] proposed the author has said that our main objective is to reduce the crowd at the CNG station and save the user's time and provide him with live information of CNG station. Prachi Jain, Rashid Ali [4] the author has given information about the model of CNG station, in which he has said that we have to calculate how many nodes we have and how much time we need to fill a car with CNG and accordingly we have to design the architecture of CNG.

III. PROPOSED METHODOLOGY

3.1 Methodology:



The methodology of a CNG – GPS tracking and booking website using AI website typically involves several key steps. Firstly, the website needs to registration with mobile no with using opt. This includes eligibility criteria, such as vehicles number, model, and name of user. Secondly, the website should allow users to register as vendor by providing their mobile number, numbers of nodes and location. Thirdly, there should be a system for scheduling cng slot appointments and locating nearby CNG pump. Additionally, the website should have features for users to track the real time condition of CNG pump and receive notifications. Finally, the website should prioritize security and privacy measures to protect user's information. Overall, the methodology aims to reduce the time, price and reduce frustration

- **User Registration/Login:** Allow users to create accounts and log in securely.
- **Vendor Profile:** Enable vendors to create and manage their profiles, including pump information, location, number of nodes etc.
- **Search/Find CNG pump:** Implement search functionality for users to find the nearest CNG pump based on live location etc.
- **Booking System:** Allow users to book a slot and get a notification
- **Admin Panel:** Create a secure dashboard for administrators to manage users and vendor's accounts.

3.2 Implementation:

Our implementation process focuses on transforming the vision of an intelligent, efficient CNG booking system into a functional and user-centric web platform. Every feature and module is carefully developed to meet the needs of both CNG users and station operators. From designing an intuitive, mobile-responsive user interface to building a secure and scalable backend infrastructure, we emphasize precision, efficiency, and reliability at every stage. Leveraging cutting-edge technologies such as Artificial Intelligence, GPS tracking, real-time analytics, and cloud-based databases, the platform enables users to easily locate nearby CNG stations, view live fuel availability, and pre-book refueling slots. Meanwhile, station owners are empowered with an advanced admin dashboard to manage bookings, monitor resource usage, forecast demand, and optimize service delivery. The implementation also includes AI-driven features such as time-slot optimization, predictive demand analysis, and dynamic routing suggestions, ensuring a smooth and intelligent user experience. Rigorous testing procedures are conducted throughout development to validate performance, security, and scalability under real-world conditions. Together, the implementation and testing phases form the backbone of our effort to revolutionize the CNG refueling experience, reducing waiting times, improving operational efficiency, and enhancing user satisfaction. Our system stands as a step forward toward building smarter, more sustainable urban mobility solutions.

3.3 Overview

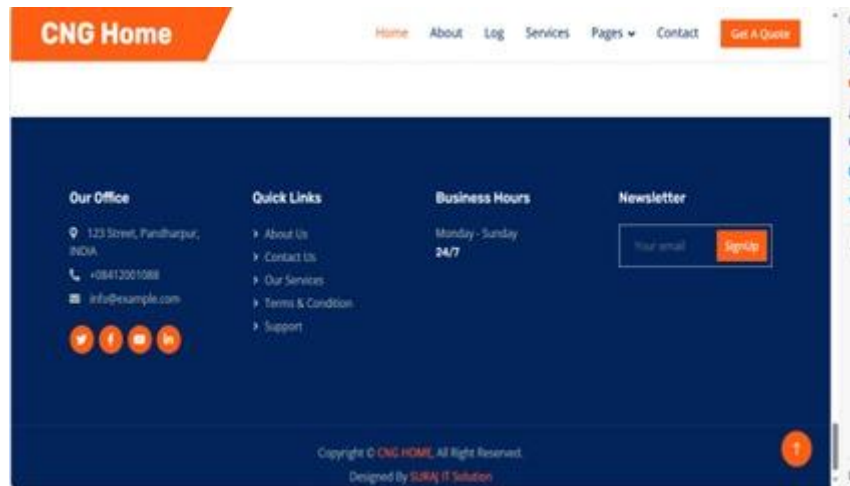
This document provides an overview of the CNG GPS Tracking and Booking System, highlighting its purpose, scope, and key features. It also defines the user classes and characteristics, outlines the operating environment, and specifies design constraints. The primary goal is to create a smart, efficient refueling system where users can conveniently locate, book, and refuel at CNG stations with minimal wait times, leveraging real-time GPS tracking and AI-based predictions to optimize resource usage and enhance the overall user experience.

IV. RESULT AND DISCUSSION

I. Home Page



II. Contact



III. User



V. CONCLUSION

Building an intelligent CNG GPS Tracking and Booking System using AI represents a major step toward modernizing the traditional refueling process. This project addresses the growing challenges of long queues, unpredictable wait times, and inefficient resource management at CNG stations. By enabling users to locate nearby stations, check real-time fuel availability, and pre-book convenient time slots, the system significantly enhances user satisfaction and operational efficiency.

CNG plays a critical role in promoting sustainable transportation by offering a cleaner and more economical fuel alternative. However, without the right technological support, both users and vendors face unnecessary hurdles. This platform bridges that gap by introducing smart solutions such as AI-driven demand forecasting, dynamic time-slot allocation, and route optimization, ensuring smoother, faster, and more reliable refueling experiences. Additionally, the web-based system provides intuitive interfaces for users and robust management tools for station operators, encouraging seamless coordination between both sides. By leveraging collective technological advancements and user-centric design, the system contributes to the broader goals of urban efficiency, environmental protection, and smart mobility. Through initiatives like this, we pave the way for a future where technology not only enhances convenience but also drives sustainability and smarter resource management. By embracing innovation and responsibility, we move toward building smarter, greener, and more efficient cities for everyone.

VI. REFERENCES

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