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SERVEHUB: Home Service Booking Platform

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Abstract—

The increasing demand for reliable and convenient home services has created a need for intelligent digital platforms that simplify the process of finding and booking service professionals. This paper presents **ServeHub**, an AI-Enabled Intelligent Home Service Booking and Recommendation Platform, designed to provide an efficient and user-friendly solution for home service management. The proposed web-based platform enables customers to explore service categories, book suitable services, and access relevant service recommendations through a centralized system. It incorporates Google-based authentication to provide a convenient login experience and MongoDB for storing and managing application data. An AI-based chatbot is proposed to analyze uploaded images of damaged household items..

It also supports the management of pothole details, including severity and status, while providing database management features to organize reports and facilitate their retrieval. The system incorporates database storage and reporting mechanisms to support the maintenance of pothole records and improve information accessibility. By bringing location-based reporting and status monitoring into a unified platform, PathPulse AI aims to assist road users and responsible authorities in identifying road maintenance needs and prioritizing potential problem areas. The proposed system provides a foundation for more systematic road defect monitoring and can be extended in the future with automated image-based pothole detection, advanced severity classification, and analytical tools for road maintenance planning.

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I. INTRODUCTION

In the modern digital era, technology plays an important role in simplifying everyday activities. Home services such as plumbing, electrical repairs, cleaning, appliance maintenance, and carpentry are essential for maintaining a comfortable living environment. Traditionally, people depend on local contacts, personal recommendations, or direct communication to find suitable service providers. These methods can make it difficult to identify reliable professionals, compare available services, schedule appointments, and obtain timely assistance. Therefore, a centralized digital platform is needed to make home service booking more convenient, accessible, and efficient

ServeHub is a web-based home service booking and recommendation platform designed to connect customers with suitable service providers through a single interface. The platform aims to simplify the process of discovering services, submitting booking requests, and managing service-related activities. Customers can explore available service categories, select the required service, and place booking requests online. The platform also incorporates user authentication and database management to support organized access to user information, service details, and booking records.

The proposed system focuses on improving the customer experience through an intuitive and responsive user interface that supports both desktop and mobile devices. Google-based authentication can simplify the login process, while an administrative dashboard supports the management of users, services, and bookings. These features help organize service-related information and improve coordination between customers and the platform administrator.

An important aspect of ServeHub is the integration of artificial intelligence-based assistance and service recommendations. The proposed AI-assisted feature is intended analyzed

ServeHub aims to provide a convenient, organized, and user-friendly approach to home service booking by combining web technologies, database management, authentication, and intelligent assistance. The platform seeks to reduce the effort involved in finding suitable home services and improve the overall booking experience. Through the integration of these features, ServeHub demonstrates how a web-based platform can support the digital transformation of traditional home service processes while providing opportunities for future enhancements in intelligent recommendations, service personalization, and platform efficiency

II. LITERATURE REVIEW

Previous research has explored various techniques for developing online service booking platforms, recommendation systems, and intelligent web applications. Existing digital service platforms provide users with the ability to discover service providers, compare available services, and schedule appointments through online interfaces. These platforms have simplified the process of accessing home services such as plumbing, electrical repairs, cleaning, and appliance maintenance. However, challenges related to personalized service recommendations, efficient service discovery, and integrated booking management remain important areas for further improvement.

Research on recommendation systems has demonstrated how user preferences, service characteristics, and historical interactions can be used to suggest relevant options. Content-based filtering recommends services based on their features, while collaborative filtering identifies patterns in the preferences of different users. These techniques can support personalized service discovery by helping customers identify services that match their requirements. However, the effectiveness of recommendation systems depends on the availability and quality of relevant data, and some approaches may face limitations when information about new users or service is to the an



Artificial intelligence and computer vision have also created opportunities for image-based analysis in web applications. Image recognition techniques can help identify objects, classify visible damage, and support preliminary recommendations based on uploaded images. In a home service booking environment, such capabilities could assist customers in identifying potentially relevant service categories from images of damaged household items. However, image-based suggestions may not always identify the exact cause of a problem, and their reliability depends on the AI model, training data, and testing conditions.

III. METHODOLOGY

The methodology of ServeHub involves the design and development of a web-based home service booking and recommendation platform. The system follows a structured approach consisting of user authentication, service discovery, booking management, database integration, and AI-assisted service recommendations. Customers can explore available home services, select the required service, and submit booking requests through the web interface. The platform manages relevant information, including user details, service categories, and booking records, using a centralized database. The administrative dashboard supports the monitoring and management of users, services, and booking activities.

The system is evaluated through functional testing of its major components, including Google-based authentication, service browsing, booking creation, database operations, administrative functions, and booking record fretrieval. The responsive interface is also examined on desktop and mobile devices to assess usability and consistent functionality across different screen sizes. If the AI-assisted image analysis feature is implemented, it candetection. .

ServeHub aims to provide an organized and accessible approach to home service booking by integrating essential booking and management is a securing authentication and stored records, restricting unauthorized administrative access, and handling uploaded images responsibly. The platform should also communicate the limitations of AI-generated recommendations and avoid presenting preliminary suggestions as guaranteed diagnoses. Future enhancements may include improved recommendation algorithms, service provider ratings, advanced image classification, and analytical features to support better service discovery and booking management.

The final stage involves system testing and performance evaluation to verify the functionality and usability of ServeHub. Functional testing is conducted to check authentication, service browsing, booking creation, database operations, and administrative features. Responsive testing is performed to examine the interface across different screen sizes. If the AI-assisted recommendation module is implemented, it can be evaluated using representative images and by comparing its suggested service categories with expected outcomes.

IV. RESULTS AND DISCUSSION

1. Dashboard

The admin dashboard is the central management interface of ServeHub. It allows the administrator to monitor platform activities, manage customers and service professionals, organize service categories, track bookings, and review customer feedback.

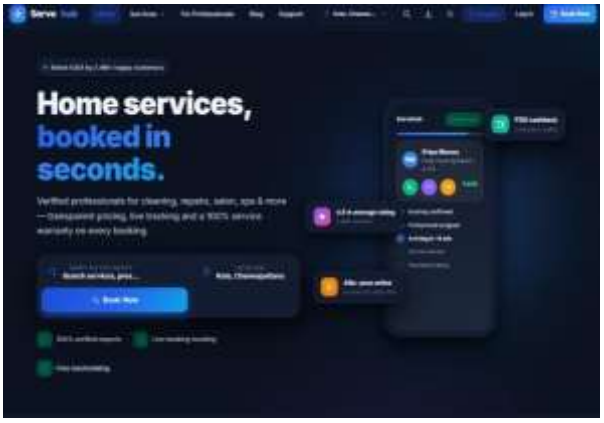


Fig. 1a. User Dashboard of the serve hub



a) Login page

The admin login page provides authorized administrators with secure access to the ServeHub management system. Administrators can log in using their registered credentials and access the administrative dashboard. The dashboard supports the management of customers, labourers, service categories, bookings, and service requests. It helps administrators monitor platform activities, maintain service information, and ensure the smooth operation of the home service booking platform.

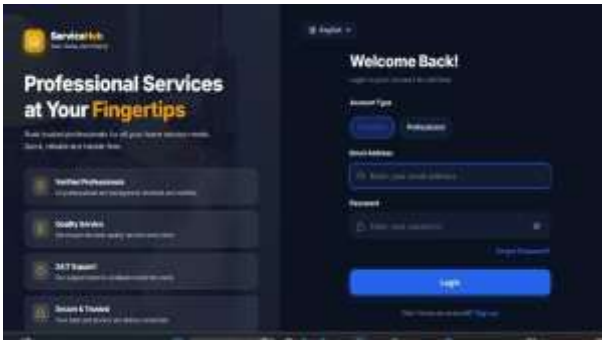


Fig. Admin Login Interface of ServeHub

b) Reported Bookings and Labour Management

The reported bookings interface displays customer service requests, booking IDs, selected service categories, customer details, labour or service provider information, booking dates, and current booking status. Administrators can search and filter booking records based on service type, date, and status. The interface helps administrators monitor pending, confirmed, completed, and cancelled bookings. It also supports the management of labourer profiles and service availability, enabling efficient coordination between customers and service providers.

The administrative dashboard provides an organized view of booking information, including the date and time of each request, the selected service, and the assigned labourer where applicable. This information helps administrators track service progress and manage platform operations efficiently.



Fig. Booking Records and Labour Management in the ServeHub

c) Booking process

The ServeHub user interface provides a user-friendly platform for customers to explore and book various home services. Users can browse service categories such as plumbing, electrical work, carpentry, painting, cleaning, and appliance repair. Users can select the required service, such as plumbing, electrical work, cleaning, painting, or carpentry, and provide the necessary details about their requirements. They can enter their service location, select a preferred date and time, and submit the booking request. The system records the booking details and displays the booking status to the customer.

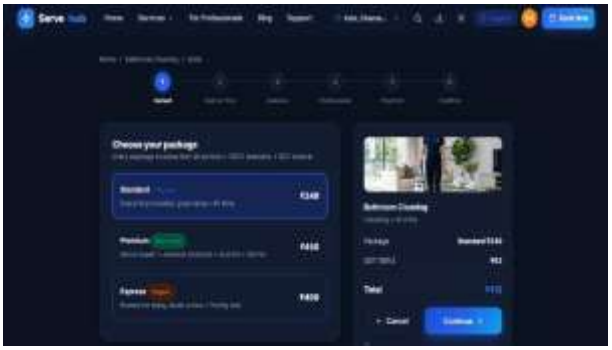


Fig. User process

d) Order Confirmation

The order confirmation process in Serve Hub allows customers to verify their service booking details after submitting a request. Once a customer selects a service, chooses a preferred date and time, and provides the service location, the system displays a confirmation summary containing the booking ID, service name, booking date, time, customer details, and estimated service cost, if available. After the customer confirms the booking, the system saves the request and displays the booking status. The customer can view the confirmation details and track subsequent updates, such as booking acceptance, service progress, and completion. This process helps reduce booking errors, improves communication between customers and labourers, and ensures efficient management of home service requests.



Fig.OrderConfirmation

V. CONCLUSION

Serve Hub provides a convenient and efficient web-based solution for connecting customers with labourers and home service providers. The platform allows users to explore different service categories, select the required service, book labourers, schedule appointments, and receive booking confirmation. The admin dashboard helps manage customer details, labourer information, service categories, and booking records. By simplifying the traditional service booking process, ServeHub reduces the time and effort required to find suitable workers for household tasks. It also helps service providers connect with customers and manage their service requests efficiently. In the future, the platform can be enhanced