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MECH-ASSIST WEBAPP

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Abstract: *The Mechanic Assistance App is a groundbreaking service that brings car owners and mechanics into real-time contact, thus making roadside repair more accessible and convenient. The app boasts a two-in-one platform with User Mode, in which customers order mechanic assistance, upload photographs of the problem, and pinpoint their location. The Mechanic Mode enables mechanics to see orders, accept offers, and guide the customer to's location. The system utilizes real-time location tracking, secure user authentication, and effortless in-app communication, providing quicker response times and better service quality. Through the automation of the mechanics location process and provision of an open system, the app seeks to enhance the user experience and the effectiveness of roadside assistance services. The app is scalable, with the possibility of partnerships with car manufacturers and automotive service providers.*

Keywords: Mechanic Assistance

I. INTRODUCTION

The app features a two-in-one platform with User Mode, where customers place orders for mechanic services, upload images of the issue, and identify their location, and the Mechanic Mode to allow mechanics to view orders, accept offers, and navigate to the customer's location. The system takes advantage of real-time location tracking, secure user authentication, and seamless in-app communication, ensuring faster response times and improved quality of service. Customer comfort and security are the foundation of this platform. GPS integration ensures minimal wait time by sending the closest relevant service providers to the user. All service providers are vetted for professionalism and reliability, providing services such as tire changes, jump starts, and more.

This review paper builds on the foundation of our previous work, refining research, introducing fresh insights, and addressing prior limitations to further enhance platform effectiveness.

II. BACKGROUND THEORY

Building on what was spoken about in the introduction, understanding the foundational technology is very important in explaining the On-Road Vehicle Breakdown Assistance Finder. At the heart of this platform is a web-based system that provides an intuitive way for users to interconnect with roadside service providers nearby during emergencies. One of the main systems therein operates under Dijkstra's Algorithm to find the shortest and most efficient path from a user's present location to a mechanic or assistance provider who is nearest at that moment. When the user launches the app and fills in their current location with fewer vehicle details, the system instantly comes into action. Using real-time data and taking into consideration the traffic conditions, the platform calculates the best route by which the mechanic can reach the user in the least time. There are at least some dynamic mapping APIs integrated with the application to allow users to view live routes and ETAs, hence maintaining a transparent and interactive experience where users feel informed and in control. A fully managed database of service providers is maintained under the system for verified providers that keep detailed profiles involving availability, service type, response time, and customer ratings. Apart from its functional strength, the platform also delivers design elegance in terms of user experience and safety. It boasts a responsive UI design that caters to multiple devices. With protection schemes for user data in place, alerts begin.

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III. WEB APPLICATION OVERVIEW

Nowadays, with extremely fast-paced developments in the world and heavy dependency upon personal transportation, vehicle breakdowns pose a very stressful situation for car owners who are in turns left stranded in an unfamiliar territory. In trying to respond to the need for fast, reliable roadside assistance, we are launching a web application that quickly and efficiently connects the driver with any assistance service nearby. The platform is designed to provide real-time, location-based support using smart technologies. Using advanced mapping tools and the Dijkstra algorithm, the application dictates the shortest and fastest route from the user's location to the closest available service provider. Users enter their location and vehicle details in a beautiful, easy-to-navigate interface, and the system takes care of all the work: it even considers real-time traffic updates to optimize the route for assistance. The system also maintains a database of trusted service providers, giving users access to vital information such as estimated time of arrival, service types, and contact details. This introduction is supposed to be a preamble to a web-based solution that will provide an easy way to get assistance when it's really needed-the most-worrying during unexpected roadside emergency.

IV. WEB DEVELOPMENT

In this project, during the development phase of the Vehicle Breakdown Assistance Finder, we're all about creating a user-friendly platform that helps people navigate those stressful moments when their vehicle breaks down. The core of this web application features an interactive map that shows nearby mechanics and service centers. To make this happen, developers often turn to tools like Google Maps, Mapbox, or Leaflet.js, which let users easily see their options for assistance and find their way around. These mapping services play a crucial role in enabling users to make quick and confident choices when they need help the most. Our aim is to cut down on confusion and delays, so users can get the support they need with just a few clicks. With a design that emphasizes speed and simplicity, this web solution is more than just a tool—it's a reliable partner for anyone dealing with vehicle issues on the road.

V. IMPLEMENTATION

Making the front-end design comfortable and accessible for users is essential to making this application a reality. Our clean, responsive layouts work well on all devices, including laptops, tablets, and phones, thanks to the use of common web technologies like HTML and CSS. JavaScript and well-known front-end frameworks like React or Vue.js power the interactive features, handling everything from real-time updates to user logins and dynamic routing. The integration of the Google Maps API, which enables users to view their current location, track service providers in real time, and visually monitor their progress, is a noteworthy feature. However, we didn't stop with the fundamentals; the platform also has real-time alerts, direct messaging, and user reviews, all of which are intended to Maps direction using Dijkstra algorithm to find the short path.

VI. APPLICATION PAGES

- Home page
- Customer login page
- Services available near location
- Admin dashboard
- Booking dashboard
- Emergency request page
- Email notifications after request
- Map routing using Dijkstra algorithm

VII. AIM AND OBJECTIVES

Title

Mech Assist Webapp

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Aim

To develop a web application that allows users to quickly and efficiently find nearby road vehicle breakdown assistance services during emergencies.

Objectives

- To conduct a literary survey akin to Review the body of research to identify current road vehicle breakdown assistance finders.
- To design the application, make sure it strongly combines functionalities and userfriendly aspects.
- To examine the application. Analyze and maximize the performance of the application to guarantee flawless functionality in case of vehicle breakdowns
- To produce a report, gather a thorough overview of the development process, test results, and application insights.

VIII. METHOD AND METHODOLOGY

The main goal of this project is to develop a smart, web-based solution that helps vehicle owners quickly and easily find nearby assistance during roadside emergencies. Through thoughtful design and technology integration, this application aims to improve response times and reduce stress for users when their vehicles break down. To achieve this, the project is guided by the following key objectives:

1. Conducting a Literature Survey

Before diving into the development process, it is essential to understand what has already been done in this space.

1.1 Perform a comprehensive review of existing road vehicle breakdown assistance platforms, studying their core functionalities, user experience, and overall effectiveness.

1.2 Identify gaps and limitations through user feedback and current technologies. These insights will help us enhance our solution to offer a more efficient user experience.

2. Designing the Application

This stage focuses on developing a practical and user-friendly application based on our understanding of current solutions.

2.1 Prioritize an intuitive, aesthetically pleasing, and device-responsive UI that allows users to navigate the app comfortably, even in stressful situations.

2.2 Integrate critical features such as emergency contact information, service selection, user-friendly forms, and real-time location access. The design should feel familiar and comforting.

3. Putting the Application into Practice

After finalizing the design, we move on to the actual development phase using appropriate coding and technologies.

3.1 Implement Google Maps for accurate user location tracking and identifying nearby service providers, ensuring fast and effective assistance.

3.2 Include a review and rating system to enable users to make informed decisions based on others' experiences, building trust in the service network.

4. Testing the Application

Extensive testing is essential to ensure the application performs reliably under real-world conditions.

4.1 Conduct rigorous testing across various devices, network speeds, and locations to ensure consistent performance when users need it most.

4.2 Refine the application based on test results, optimizing for speed, reliability, and usability, especially during urgent situations.

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5. Producing an Extensive Report

Comprehensive documentation ensures transparency and learning throughout the development cycle.

5.1 Document every phase, from initial research and design sketches to development, testing, and final deployment.

5.2 Include technical insights, challenges faced, lessons learned, and ideas for future development in the final report.

IX. CONCLUSION

During emergencies, the Road Vehicle Breakdown Assistance Finder app is an essential resource for quickly connecting users with local assistance providers. It improves the overall experience for drivers in need by giving priority to real-time data, map integration, and user-friendliness, guaranteeing effective and efficient roadside assistance.

X. EXPECTED RESULTS

- Effective Assistance Location: : The map interface allows users to find nearby roadside assistance services with speed and accuracy. Improved User Experience: The map-centric design enhances user satisfaction by making the process of finding assistance services more user-friendly and intuitive.
- Enhanced Decision-Making: Enhanced Decision-Making: Users can make informed decisions regarding their preferred assistance provider based on geographic proximity and other relevant information displayed on the map.
- Reduction in Response Time: Reduction in Response Time: The use of maps leads to a faster response time during vehicle breakdowns, ultimately minimizing inconvenience and safety concerns.
- Enhanced Safety: By being able to locate themselves precisely on the map, users can better inform help providers of their location, which increases their safety.
- Feedback System: The system facilitates user feedback and reviews, which can help in maintaining the quality of service and provider recommendations.
- Mobile Accessibility: The application is accessible on various devices, including mobile phones, ensuring assistance is readily available while on the road.

XI. CONCLUSIONS AND SUGGESTIONS FOR FUTURE WORK

Conclusion

In conclusion, by effectively locating assistance services during vehicle breakdowns, the mapcentric web application for Road Vehicle Breakdown Assistance Finder greatly improves the user experience. Map integration expedites decision-making, speeds up reaction times, and increases user security.

Suggestions

• Implement real-time updates for provider locations.
• Integrate with emergency services.
• Use AI-powered routing.
• Expand service coverage.
• Add user personalization features.

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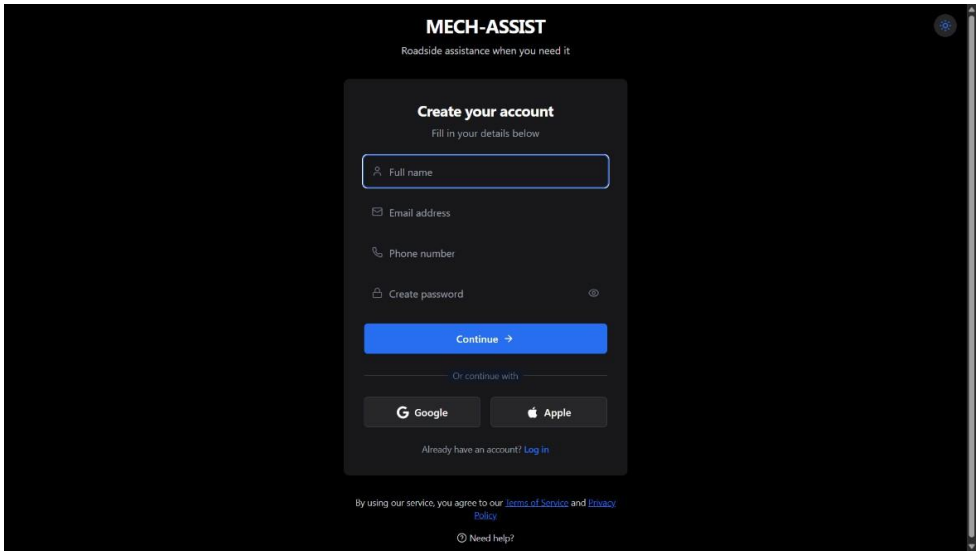
XII. PROJECT SCREENSHOTS



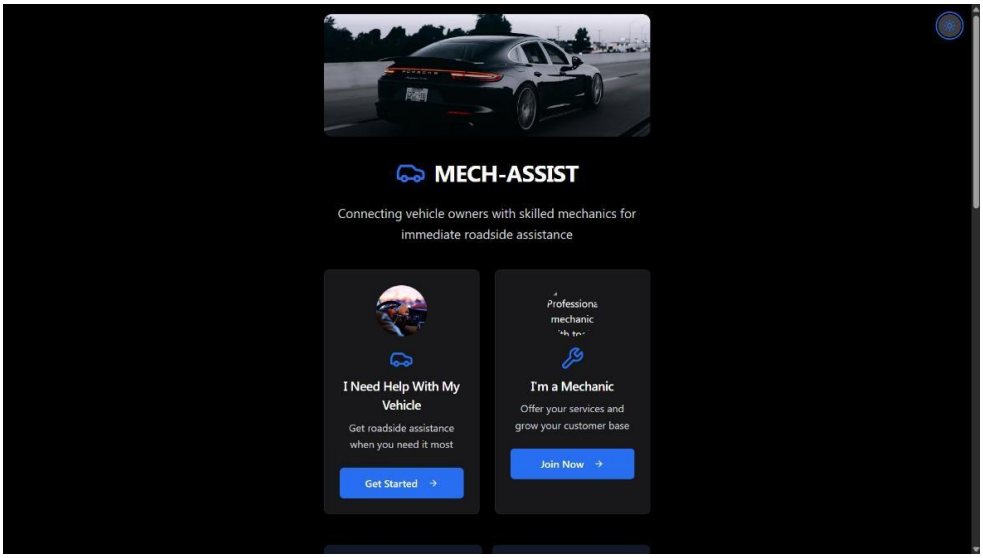


Figure: login page & selection page

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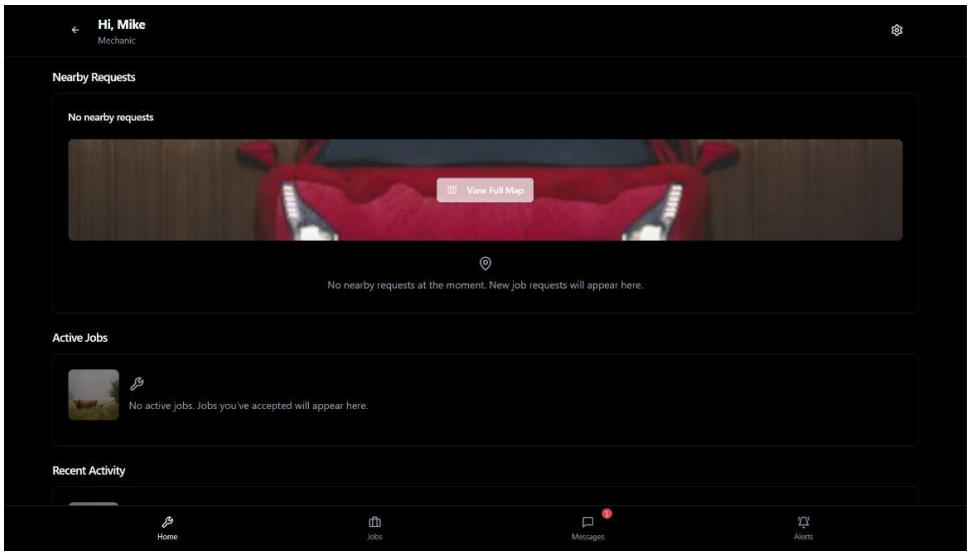

Figure: Mechanic Dashboard

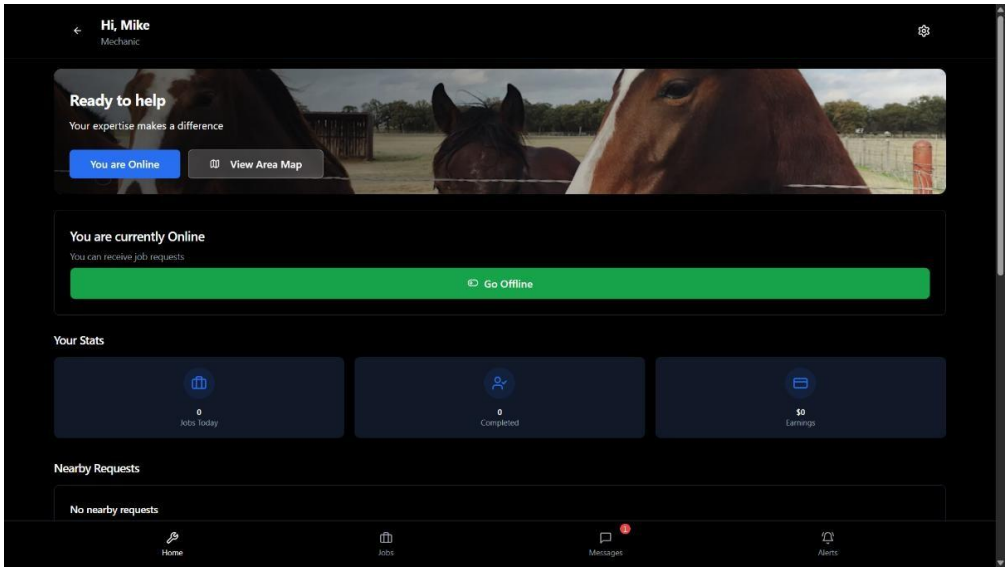

Figure: Messaging Feature & User Dashboard

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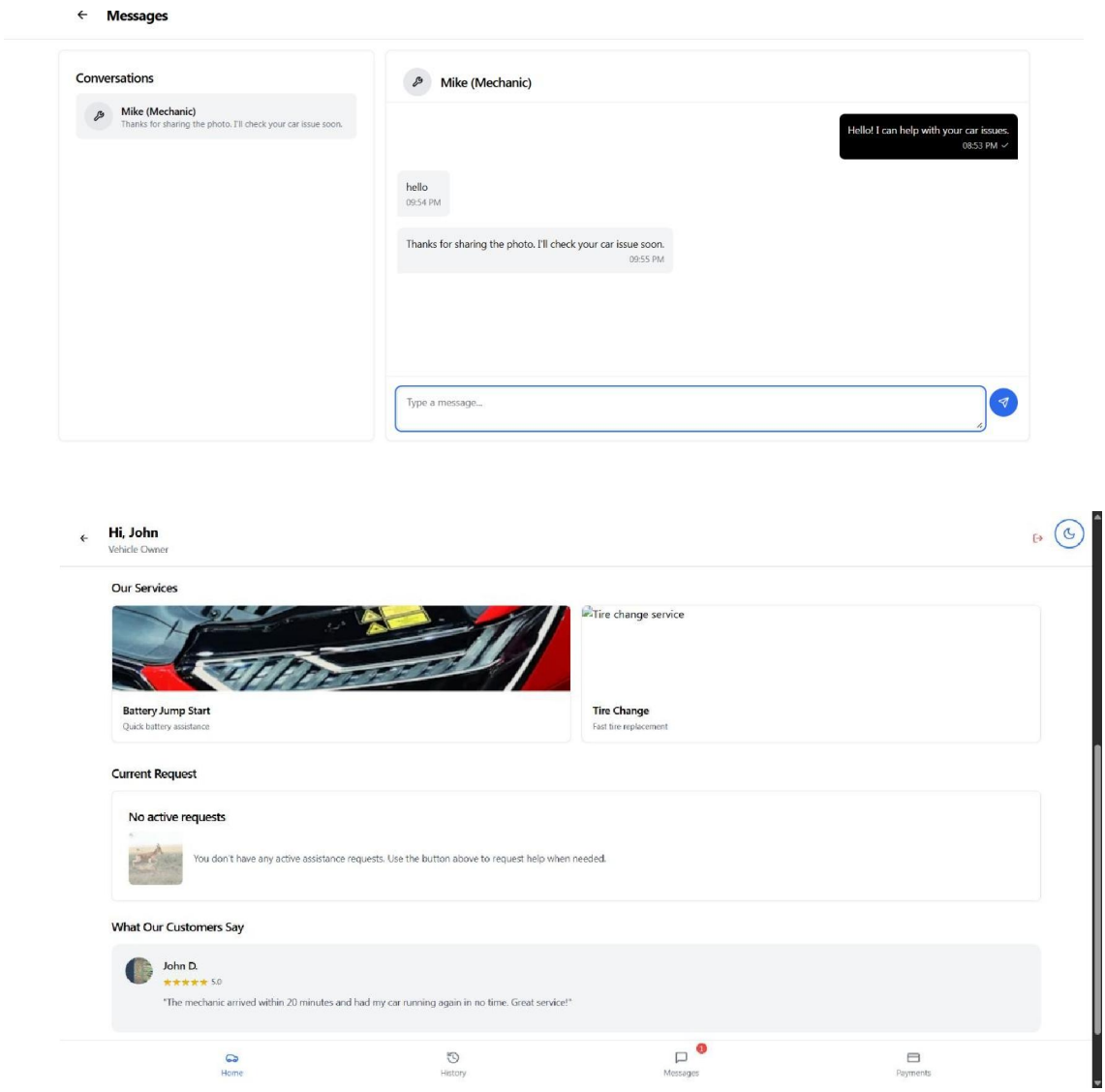

Figure: Shows near by mechanics

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