# Road Rescue – A Roadside Assistance App to find Nearby Mechanics

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***Abstract*— The proposed application offers a quick and easy way to locate mechanics. Finding a nearby mechanic while traveling can be challenging, and this system addresses that by providing mechanic information at the click of a button. Users can search for mechanics across various locations, while admins have access to manage mechanic details. This online mechanic locator minimizes effort and enables quick access to mechanics in different areas, saving both time and money. Its main goal is to enhance service delivery and simplify the process of appointing a mechanic efficiently.The system is designed for three user roles: Admin, Mechanic, and User. Mechanics can view requests from users and send feedback to the admin, while users can send a request and book a mechanic for a specific date and time. Additionally, service organizations, which handle after-sales support, use this tool to streamline operations. As customer bases and service demands grow, organizations can divide geographic areas into manageable service regions, allowing engineers to better respond to customer needs. [4].***

***Keywords —Assistant, Mechanic, GPS, Booking Appointment.***

## I. INTRODUCTION

In our modern lives, unexpected car troubles can be highly inconvenient, especially when we're stranded in unfamiliar places without access to nearby mechanics. To address this issue, the proposed project seeks to develop an Android application that connects users in need with nearby mechanics, transforming how automotive assistance is accessed. This application addresses the common challenges people face when their vehicles break down on the road. Frequently, individuals have limited knowledge of nearby mechanic locations, leading to time-consuming searches, asking for directions, or even walking considerable distances in search of help. This inconvenience becomes even more pronounced when breakdowns occur in unfamiliar areas or during late hours when traditional shops are .closed.

## II. LITERATURE REVIEW

This chapter examines key literature relevant to this study, including case studies, theoretical frameworks, and critical analyses. It provides a summary of the topic, identifies gaps in existing research, and introduces the proposed system as a potential solution. A Additionally, it outlines the structures, architectures, and implementation strategies of related systems.

There are three existing websites:

- *J&K Auto Repair[2]:*

This web-based auto-repair shop system aims to provide high-quality repairs at fair prices to ensure customer satisfaction. It allows customers to book appointments online for services such as routine inspections, oil changes, alignments, or engine replacements. While currently web-based, the system could be enhanced by developing an Android version, streamlining the booking process and reducing the time spent navigating multiple web pages.

- *OpenBay[3]:*

Openbay is a web-based platform where drivers can compare, book, and pay for auto mechanic services online. Mechanics can submit their information, making it easier for drivers to find and book them. The platform provides a dashboard where drivers can manage account activities and includes the option to sign in via Facebook. While it allows for online mechanic booking, it lacks a feature for contacting a mechanic in case of an emergency breakdown.

- *Auto Connect[2]:*

Auto-Connect is a high-end mobile application designed for automotive technicians, repair chains, and auto repair shops of all sizes. It enables convenient online booking for vehicle services anytime, from anywhere. Auto-Connect assists drivers in locating and booking the nearest mechanic for full auto service or repairs. This app is primarily intended for auto repair businesses located in urban areas.

Disadvantages:

1) It isn't reasonable application for crisis needs.

2) It isn't practical, as clients in unfamiliar locations would first need to identify their location using one app and then search for nearby mechanics using another, adding unnecessary steps.

## III. RESEARCH METHODOLOGY

### A. *System Design*

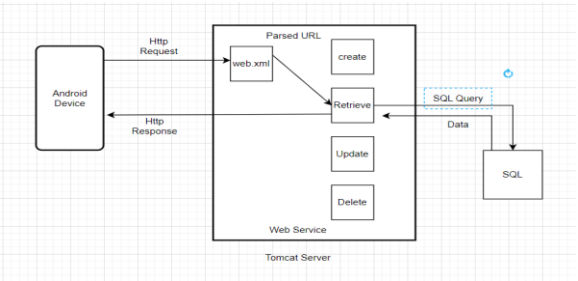


*Fig 1: System Design*

### B. *Frontend Development*

The mobile application's user interface was designed and implemented using React Native. User requirements were gathered to guide the interface design, ensuring it met their needs. React Native was utilized to develop UI components, establishing the app's structure and organization, including navigation, input forms, and feedback mechanisms. Comprehensive testing ensured functionality, usability, and an enhanced user experience, with user feedback integrated throughout the design process to refine the application.

### C. *Backend Development (Spring Boot)*

To construct a mobile application's reliable and effective backend server. Design choices provide the foundation of the Spring Boot backend. To handle user requests with ease, the database, APIs, and data models were selected. For coding, Spring Boot features and technologies were used. APIs made it easier to process, store, and retrieve data. Measures for authentication and security were combined. Testing guaranteed the performance, dependability, and functioning of the backend. Techniques improved the server's scalability and response speed.

### D. *Database Design (MySQL)*

To create an efficient and structured database to store application data. Tables, relationships and constraints formed the database schema. MySQL was selected as the database management system Data from various sources, such as user input and backend operations, were stored and managed in the database. Data migration, updates, and indexing enhanced retrieval efficiency.

Data integrity, backup, and recovery were ensured. Database performance and query efficiency were optimized.

1) *Problem Analysis:* It emphasizes how important it is to get automotive help quickly, improving the security and comfort of passengers who experience

### E. *Development Model:*

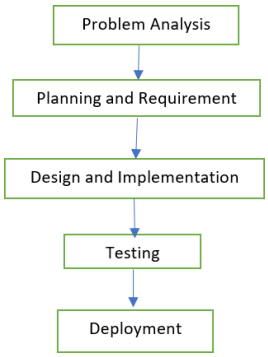


*Fig 2: Flowchart*

unplanned car breakdowns. These travel-related interruptions, which frequently take place in strange places or outside of regular business hours, highlight how urgent on-demand assistance is.Market research confirms the demand for an automotive assistance application, highlighting existing solutions limitations in terms of efficiency and convenience.

2) *Planning and Requirement:* The project aims to develop an automotive assistance application that caters to travelers needs for swift, on-demand automotive support. Key features and functionalities for user, mechanic, and admin modules have been defined through user stories and use cases to address user requirements effectively. The selection of React Native for the frontend, Spring Boot for the backend, and MySQL for the database aligns with the project's goals, ensuring robust and efficient development.

3) *Design And Implementation:* The user interface has been designed and implemented using React Native. User feedback has been integrated, resulting in an intuitive and user-friendly interface. The Spring Boot backend architecture was developed to facilitate efficient datahandling and user interaction. APIs were created to connect the application's components. The

MySQL database structure was established, including tables and relationships.Data migration and indexing were implemented for optimal data management.

4) *Testing*: Various testing approaches were implemented to verify the functionality, usability, and user experience of both frontend and backend components. Database testing prioritized data integrity, security, and retrieval speed, with a particular focus on performance testing.

5) *Deployment:* The deployment plan involves releasing the application on both iOS and Android app stores, incorporating beta testing and a soft launch phase. Onboarding processes for users, mechanics, and administrators are in place, backed by targeted marketing and user retention strategies.

## IV. DATA ANALYSIS

### *A. Modular Design*

The application's functionality is organized into submodules, specifically for users, mechanics, and administrators. Together, these modules work seamlessly to deliver the desired functionality and output of the application.

*1) User Module:* The user module is designed to provide a seamless, user-friendly experience for those needing automotive assistance. Users can quickly set up accounts with their personal and vehicle details, creating customized profiles for tailored support. Assistance requests for common issues like flat tires or mechanical breakdowns are streamlined for easy access to help. Through real-time communication, users can connect directly with nearby mechanics, facilitating fast issue resolution. Secure in-app payment options allow users to pay for services with ease, and a review and rating system enables them to provide valuable feedback on their experience.

*2) Mechanic Module:* The mechanic module is designed to enable mechanics to efficiently assist users seeking help. Mechanics can easily register and upload their certifications for verification, with thorough credential reviews to build user trust. They can manage service requests, deciding to accept or decline as needed, and are encouraged to respond quickly for timely support. GPS integration aids in swiftly navigating to users' locations, streamlining the assistance process. Mechanics mark requests as completed to enable accurate billing, and in-app payment processing provides a smooth, hassle-free experience.

*3) Admin Module:* The admin module acts as the central hub for managing application operations and ensuring data integrity. Admins have full access to user and mechanic profiles for effective moderation and account management. They oversee data integrity and conduct regular backups to maintain the system. Handling user complaints and disputes is a key responsibility, ensuring timely resolutions for user concerns. Admins also monitor the application for technical issues and glitches, ensuring the system runs smoothly and reliably. This module plays a crucial role in maintaining the overall functionality and trustworthiness of the application.

### *B. Advantages of Proposed System:*

- It is one of the best applications used while emergency.
- Easy to use.
- Search mechanics based on different locations.
- Secure registration of user's and mechanics
- Reduced manual work.

## RESULT

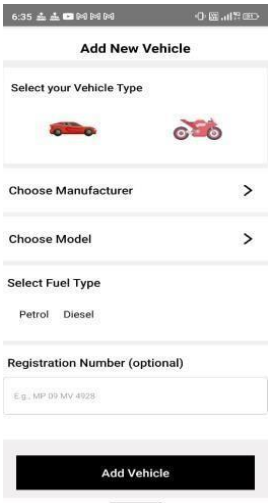


Fig 3: Add Vehicle Page

The "Add Vehicle" page of our application provides several options for users to input their vehicle details. Users are required to select the vehicle type, manufacturer, model, fuel type, and enter the registration number to complete the vehicle addition process.

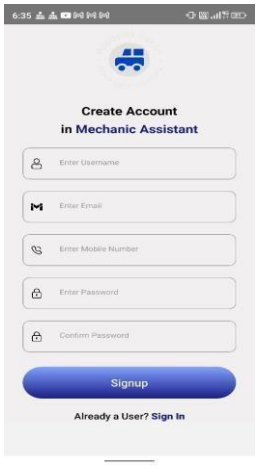


Fig 4: Register Page

This page is Registration page where user can register themselves by filling the details.

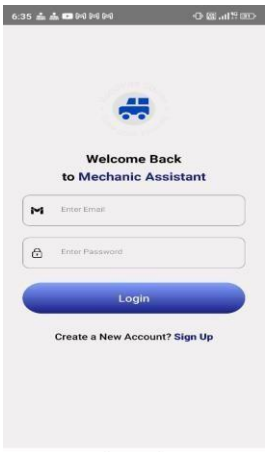


Fig 5: Login Page

In the process of login, the user will insert username and password and then click on Login button. If the login credentials are correct then user will enter in the application.

## FUTURE WORK

- In Future we will provide the facility of chatting between Driver and Mechanic in our website.
- App can provide alarm feature. App will ring an alarm on mechanics app when its emergency for customers.
- In future app also provides all charges of material required for servicing the car this all cost is display in app and this will see every customer and also users pay according to the actual distance traveled by the mechanic to provide assistance.

## LIMITATION

- Requires an active internet connection.
- System will provide inaccurate results if data not entered properly.

## CONCLUSION

Road Rescue" allows users to quickly and easily find a mechanic anytime, anywhere. Whether traveling or in an unfamiliar area, the app helps users locate nearby mechanics when needed. If users are satisfied with the work of the mechanic assigned through the app, they can rate their service on the mechanic's profile. This page explains the project's purpose and its value to users, offering assistance when vehicle issues arise during travel through

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