

Enhanced User Convenient Campus based E-Rickshaw Polling System Using Flutter

Dr. V Sindhu1*

Assistant Professor

School of Computer Applications

Lovely Professional University, Punjab

Himanshu, Swagat Sourav Mahana, Divyansh Kumar

Masters in Computer Application Lovely Professional University, Punjab

Abstract:- Online Cab Booking System is the development of a mobile application specifically designed for a cab booking system within a small zone area, such as a university campus. The study aims to identify the key features and requirements for the app and provide insights into the potential benefits it can offer to the university community. Moreover, the study will evaluate the technological requirements for developing a mobile app-based cab booking system within the small zone area of the university, including the necessary infrastructure, equipment, and software. Overall, this study aims to provide a comprehensive understanding of the development of a mobile app-based cab booking system using Flutter and an IDE for Android development within a small zone area like a university campus and provide recommendations for app developers and university administrators to enhance the transportation options available to the university community.

Keywords:- Cab booking, Flutter, IDE, Android.

I. INTRODUCTION

The Cab Booking System (CBS) has emerged as an innovative solution to the challenges faced by the transportation industry. This system offers an on-demand, convenient, and user-friendly approach to booking and managing taxi services. The CBS is a significant step towards digitalization and modernization of the transportation industry, making it easier for people to access taxis without any hassle. The system provides a platform for users to book taxis online and track their booking status in real-time.[1]

Cab Booking System, including its architecture, design, features, and benefits, examines the impact of the CBS on the transportation industry, particularly on customer satisfaction, efficiency, and profitability. The research paper will focus on the technological advancements and innovations that have enabled the development and implementation of the CBS.[2] The study will also analyze the challenges faced during the implementation of the CBS, such as data privacy and security, and propose potential solutions to overcome these challenges.

The Cab Booking System is an excellent example of the integration of modern technology into traditional industries, resulting in enhanced customer experience, improved service delivery, and increased efficiency.[3] The paper will provide a comprehensive analysis of the Cab Booking System and its potential impact on the transportation industry, making it a valuable resource for academics, researchers, and industry practitioners.

II. PROBLEM STATEMENT

- **Availability:** Depending on the time of day, there may be a limited number of e-rickshaws available for students to use, particularly during peak hours when classes start and end.
- **Safety concerns:** Students may be concerned about the safety of e-rickshaws, particularly if they are traveling alone at night. It is important to ensure that the e-rickshaw is in good condition and that the driver is licensed and experienced.
- **Fare disputes:** Sometimes, e-rickshaw drivers may charge students more than the fair price, especially if they are new to the area and are not familiar with the regular fare. This can be frustrating for students who are trying to budget their expenses.
- **Traffic congestion:** During rush hour, there may be a lot of traffic congestion, which can cause delays and increase travel time for students. [4] This can be particularly challenging if they are trying to get to class on time.
- **Environmental impact:** E-rickshaws are often considered a more environmentally friendly mode of transportation than other vehicles, but they still contribute to air and noise pollution. This may be a concern for students who are environmentally conscious.[5]

III. PROPOSED METHODOLOGY

Online booking systems offer a range of features that enhance the convenience of customers while streamlining business operations.[6] These features include the ability to view real-time availability, schedule appointments, make online payments, receive automated confirmations and reminders, integrate with social media platforms, offer feedback mechanisms such as ratings and reviews, and manage multiple locations or services from a single platform. By providing these features, businesses can efficiently manage their resources and provide customers with a seamless booking process.[7] Additionally, customers benefit from the convenience of being able to

easily schedule appointments, make secure online payments, and receive automated confirmations and reminders, reducing the likelihood of no-shows or missed appointments. The integration with social media platforms and feedback mechanisms also provides valuable information to both businesses and potential customers.[8] Overall, the various features provided by online booking systems contribute to a more efficient and streamlined process for both businesses and customers.

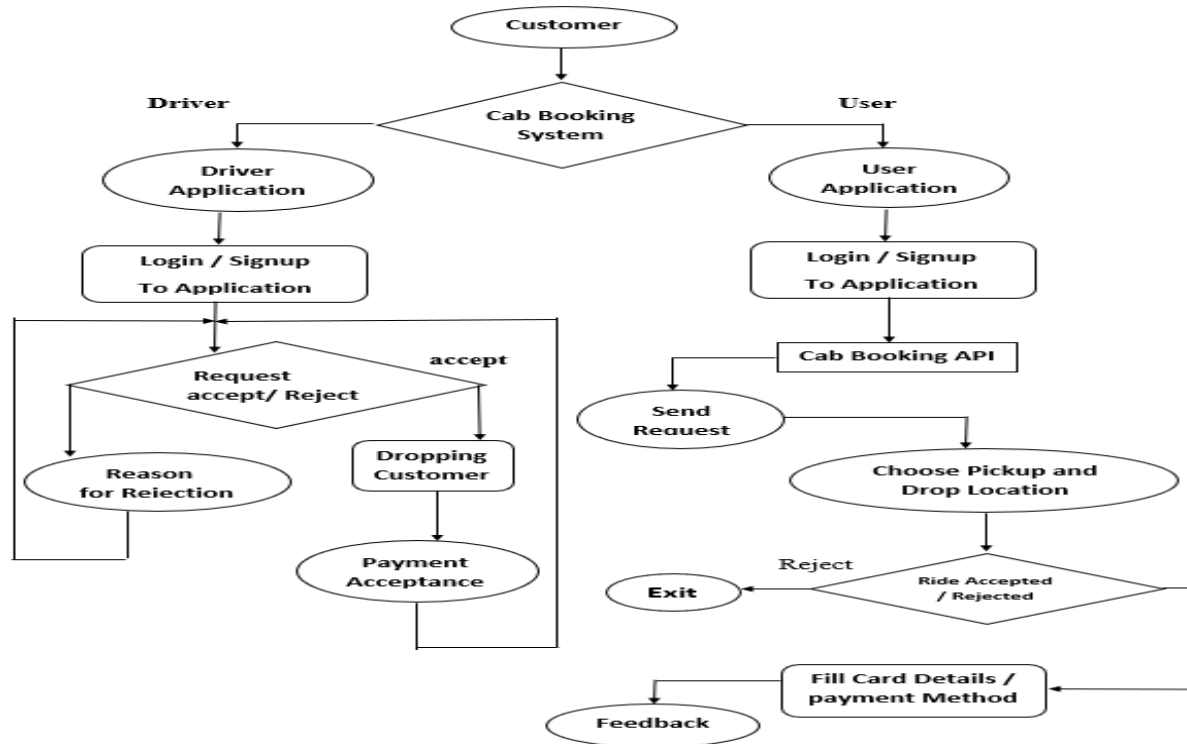


Fig. 1: Use Case Diagram of Proposed Model

IV. FEATURES OF THE PROPOSED MODEL

The proposed E-Rickshaw system has addressed the issues faced by student in an educational institution where the campus is quite big in size. [9] It focuses to provided solution to the student to pool the e-Rickshaw service provided in campus with ease. The app has been developed keeping in mind the following features,

- Step 1: Display the available services and their availability in real-time.
- Step 2: Allow customers to select a service and schedule an appointment at their convenience.
- Step 3: Provide online payment options for customers to make payment for their bookings securely.
- Step 4: Send automated confirmations and reminders to customers via email or SMS.
- Step 5: Integrate with social media platforms to allow customers to book services directly from these platforms.
- Step 6: Provide feedback mechanisms for customers to rate and review the services they receive.
- Step 7: Allow businesses to manage multiple locations or services from a single platform.
- Step 8: Track and allocate resources across the organization for efficient management of operations.

- Step 9: Provide reporting and analytics features to help businesses track their performance and identify areas for improvement.
- Step 10: Continuously update and improve the system to enhance the user experience and provide better quality service.

V. USE CASE OF THE PROPOSED MODEL

The application has been developed for both the driver and the customer to operate with ease. The model is divided into two phases as user side interface and driver side interface, each of these interfaces provided required services with ease.[10] Following are the description of the interface.

A. User Side Interface:

- Login: Authenticate with the system to access the cab booking service.
- Search: Enter the pickup and drop-off locations to retrieve the list of available cabs.
- Booking: Confirm the booking by providing details like pickup time, payment method, destination, and contact information.

- Dispatch: The system dispatches the booking details to the nearest cab driver available.
- Notification: Receive a notification with the driver's details, pickup location, and estimated time of arrival.
- Ride: Get picked up by the driver from the pickup location and ride to the destination using the fastest route.
- Payment Initiating: The fare is automatically calculated and deducted from the preferred payment method.[11]

- Rating: Rate the driver on various parameters like driving, behavior, and timeliness to provide feedback to the driver and the system.
- Feedback: Give additional comments about the ride or driver to improve the system's quality and user experience.[12]

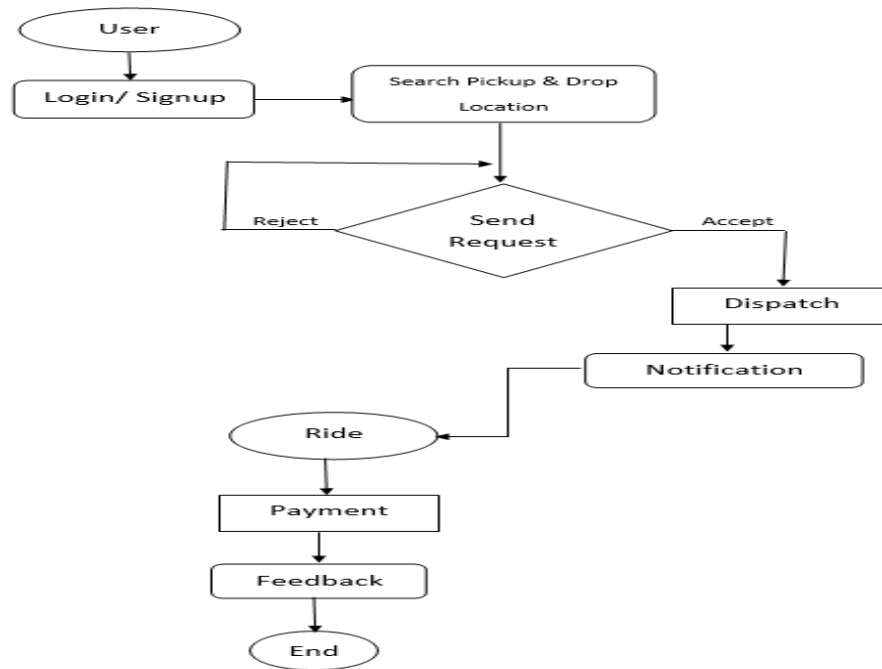


Fig. 2: User Side -Use Case

B. Driver Side Interface:

- Notification: Receive a notification on the device with the booking details, pickup location, and user's contact information.
- Acceptance: Accept or reject the booking request based on availability or other factors.
- Navigation: Use the navigation feature of the app to reach the pickup location.
- Pickup: Arrive at the pickup location and wait for the user to arrive.
- Ride: Take the user to the destination using the fastest and safest route while ensuring their safety and comfort during the ride.
- Payment Acceptance: The fare is automatically calculated and deducted from the user's preferred payment method.
- Rating: The user has the option to rate the driver based on their driving, behavior, and timeliness.
- Feedback: View any feedback provided by the user and take appropriate actions to improve their service.

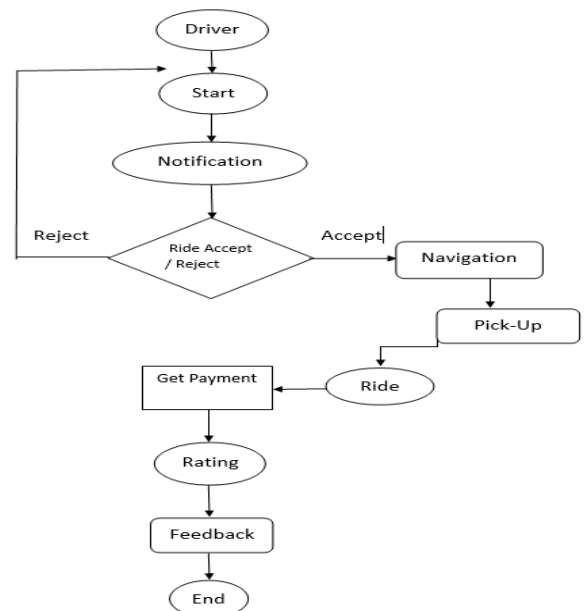


Fig. 3: Driver Side -Use Case

C. Advantages of the Proposed Model:

A cab booking system for a university can offer many benefits, such as enhanced student safety, cost savings, time savings, better management of transportation operations, increased accessibility, improved environmental sustainability, real-time tracking, reduced parking hassles, improved resource utilization, customization, data collection and analysis, and secure payment and billing.[13] Overall, it can streamline transportation services, provide a reliable means of transportation, and enhance the experience for students and staff.

VI. RESULTS AND DISCUSSION

The results of the study indicated that the developed cab booking app for the university community was effective in addressing their transportation needs.[14] The application has user-friendly interface and simplified booking process which is well received by the user, who appreciated the convenience and ease of use.

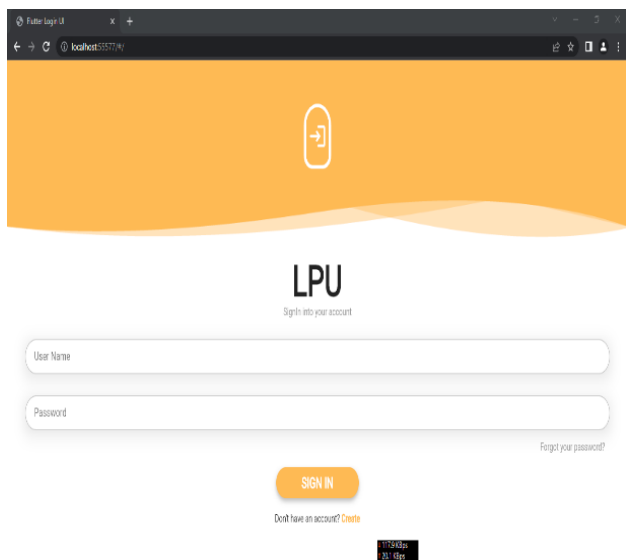


Fig. 4: Home Page

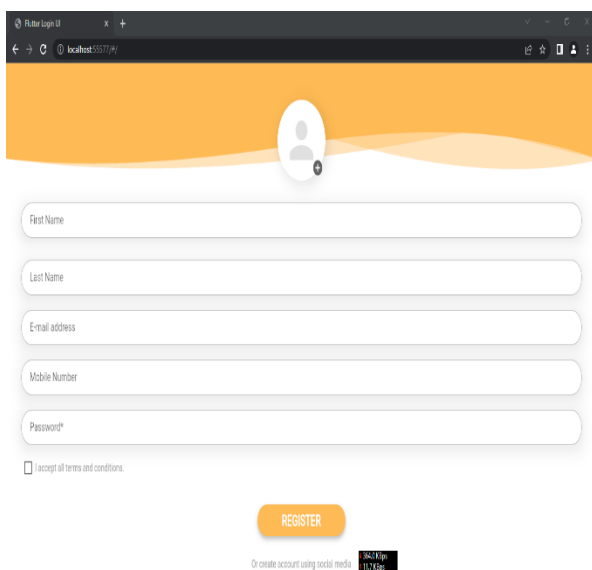


Fig. 5: Sign Up Page

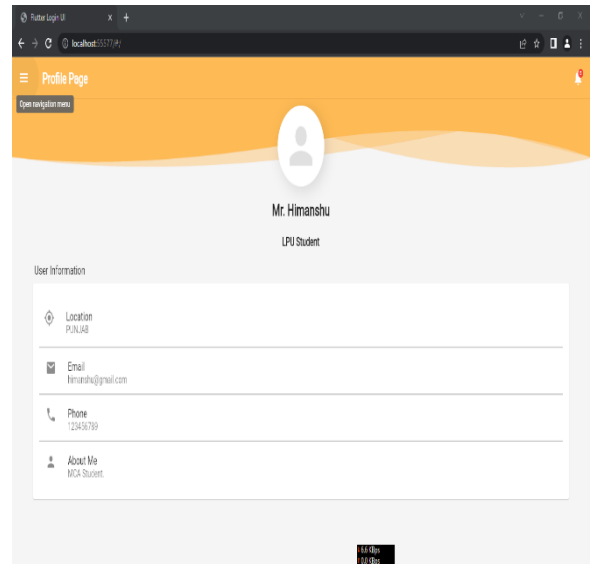


Fig. 6: Profile and Navigation Bar

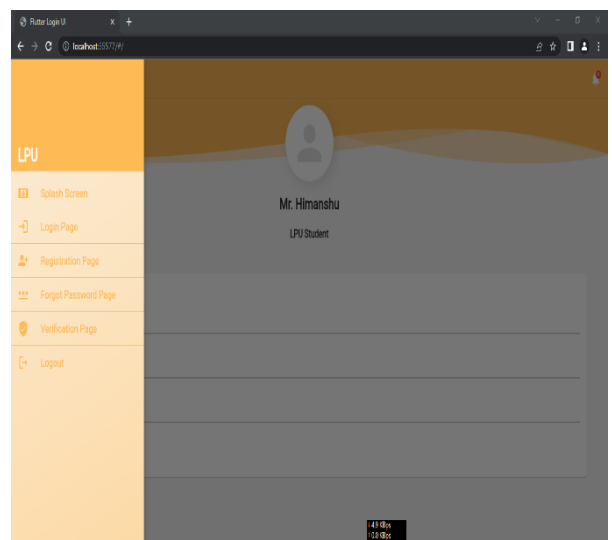


Fig. 7: E-Rickshaw Booking

The results suggests that the developed app has the potential to serve as a model for similar cab booking systems in other small zone areas, such as corporate campuses, hospitals, and theme parks.[15] The application also highlights the importance of user-centered design in the development process and the need for continuous improvement based on user feedback.

VII. CONCLUSION

A cab booking system for Lovely Professional University (LPU) would likely be a beneficial addition to the campus infrastructure. Such a system could improve transportation options for students, faculty, and staff, making it easier to get around the large campus and surrounding area. Additionally, a cab booking system could provide greater safety and security for students, particularly those traveling alone at night. By using a reputable cab service with trained drivers, users could feel more confident in their transportation options. Overall, implementing a cab booking system would likely enhance the convenience, safety, and efficiency of transportation at LPU, making it a worthwhile investment for the university.

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