Roadside Assistance Application

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Project Guide
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1. Introduction

- In today's world, everybody owns a vehicle of some kind, and if said vehicle is not maintained properly then it is prone to have breakdown sooner or later.

- Problem Identified :

  - The problem identified for this project is the inefficiency of traditional methods for providing roadside assistance during vehicle-related emergencies. This app aims to offer a fast and reliable solution to this problem.

- Solution Proposed :

  - Our proposed solution is to develop a roadside assistance app that utilizes technology such as machine learning to provide efficient and reliable support during vehicle-related emergencies.

2. Objectives

1. To develop a user-friendly interface that allows for easy navigation and intuitive use of the app.

2. To provide customers with a fast and efficient way to request roadside assistance during vehicle-related emergencies.

3. To connect customers with nearby mechanics, ensuring quick and reliable service.

4. To maintain a comprehensive database of service providers, including their specialties, availability, and customer reviews, to ensure that users are connected with the most appropriate service provider.

3. Scope

1. Can be applied in other transportation sectors, such as marine or aviation, to provide similar types of on-demand assistance services.

2. Can be integrated with the telemetry data from vehicles to provide more accurate and timely assistance in the event of a breakdown or other issue.

3. Can be applied in smart car systems to enable mechanics to remotely access and fix certain vehicle issues.

4. Literature Survey

Sr.no	Title	Author(s)	Year	Algorithms	Limitations	Result
1	Road Assist Mobile Application System	Nor Amanina Binti Zamri, Nik Sakinah Binti Nik Ab Aziz, Nurul Husna Binti Mohd Saad	2022	Natural Language Processing (NLP)	Limited insurance provider coverage and Privacy concerns as it is essential to ensure transparently to prevent privacy breaches.	Road Assist is a mobile app that helps drivers report car breakdown issues to their insurance providers using a chatbot.
2	Implementation of Motor Vehicle Tracking (SaaS)	Patrick Ryan Wijaya, Puji Valen Crisgar, Marcell D.F, Eniman Yunus, Muhammad Ogin Hasanuddin	2021	-	Compatibility, user acceptance, and efficiency are crucial when accessible applications.	The paper proposes a Progressive Web App for a vehicle-based support device.
3	On Road Vehicle Breakdown Assistance	Prof. Shital S. Aher, Unhale Tribhuvan, Gade Pranjal, Patil Tulshidas	2022	A* Algorithm	Relying on user knowledge and privacy concerns due to sharing information.	It connects users with licensed mechanics during vehicle breakdowns.

5. Proposed System

1. Feature 1 :

   - User signup and login: User can choose to signup as a customer or a mechanic.

2. Feature 2 :

   - Provision of services: Various vehicle related services will be provided to the customer.

3. Feature 3 :

   - Maps: It will provide users with location information and navigation.

4. Feature 4 :

   - Payment management: Payment will be managed through various payment gateways.

5.1 K-Nearest Neighbours (KNN)

- The KNN algorithm can be used to classify the type of assistance required based on the location of the user's vehicle and other relevant features.

- Specifically, the KNN algorithm can be used to identify nearby service providers who have previously provided assistance for similar problems and recommend them to the user.

- Overall, the KNN algorithm can be a valuable tool for predicting the type of assistance required in a roadside assistance application, by leveraging the location of the user's vehicle and other relevant features to identify nearby service providers who can provide the necessary assistance.

6. Outcome of Project

1. Customer and Mechanic will be able to sign up/sign in into the application.

2. Customer and Mechanic login will be distinguished.

3. Customer would be able to view and request a variety of services.

4. Mechanic will be able to able to accept or deny the requests.

5. Customer would be able to view the ETA of the mechanic.

6. Customer will be able to give feedback on the service received.

7. Block Diagram
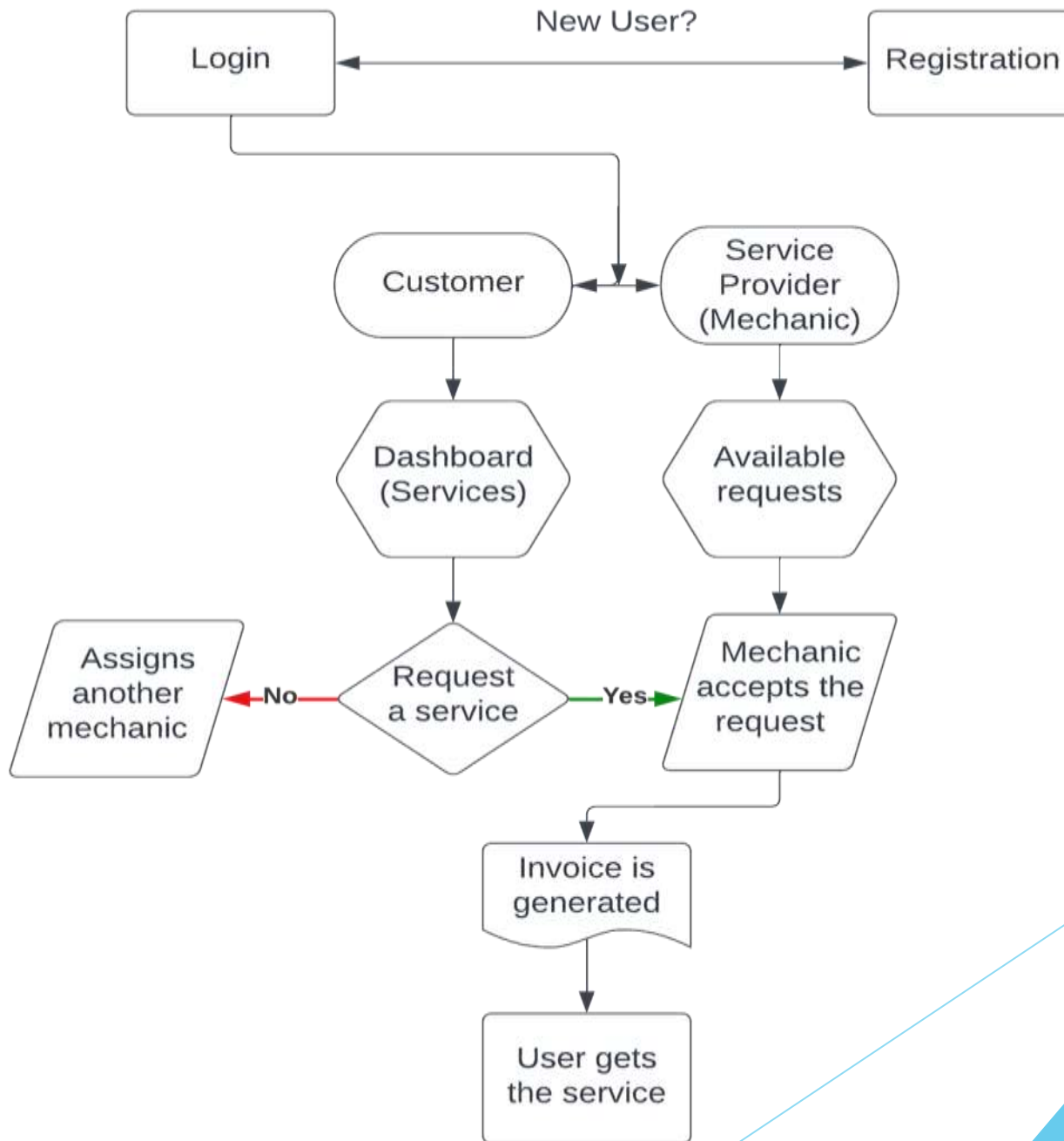
8. Use Case Diagram
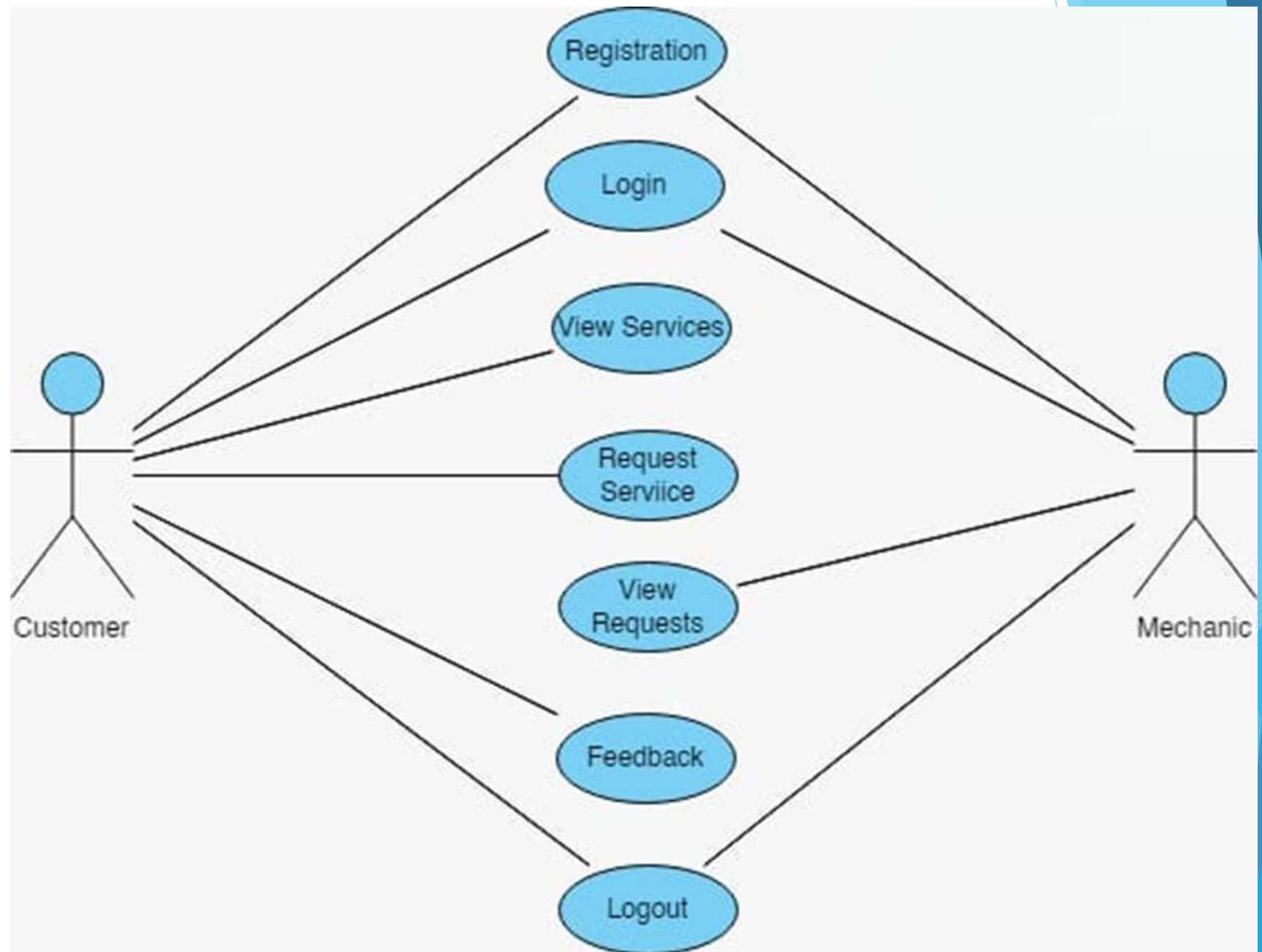
9. Technology Stack

- **<u>Frontend:</u>**
  - Flutter v3.7.3
  - Dart v2.18

- **<u>Backend:</u>**
  - Python v3.10.10
  - Firebase v31.2.1

- **<u>Algorithm:</u>**
  - KNN

- **<u>API:</u>**
  - Google Maps API

11. Result and Discussion

The Roadside Assistance Android Application provides quick and efficient roadside assistance to customers and a platform for mechanics to grow their business. The app features real-time availability of mechanics, and various payment options. The app's secure platform builds trust between customers and the application, leading to increased usage and better customer satisfaction.

The Roadside Assistance Application has the potential to revolutionize the way roadside assistance is provided to customers. The application is designed to provide quick and efficient service to customers in need, while also providing mechanics with a platform to grow their business.

12. Conclusion and Future Scope

The Roadside Assistance Android Application is a convenient platform that connects mechanics and customers, offering features such as real-time tracking, and security. The application's user-friendly interface and notification system make it easy for customers to request assistance and stay informed. The application can be integrated with smart vehicles, digital payment systems, and AI, improving speed and accuracy.

In conclusion, it is a well-designed and efficient platform that connects mechanics and customers in need of roadside assistance. The application offers a range of features, including real-time tracking, customer feedback, service history, and security, making it a reliable and convenient option for customers.

13. References

[1] Nor Amanina Binti Zamri; Nik Sakinah Binti Nik Ab Aziz; Nurul Husna Binti Mohd Saad (2022). Road Assist Mobile Application System (Road Assist). 2022 IEEE International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE).

[2] Patrick Ryan Wijaya; Puji Valen Crisgar; Marcell D.F. Pakpahan; Eniman Yunus Syamsuddin; Muhammad Ogin Hasanuddin (2021). Implementation of Motor Vehicle Tracking Software-as-a-Service (SaaS) Application Based on Progressive Web App. 2021 International Symposium on Electronics and Smart Devices (ISESD).

[3] Prof. Shital S. Aher, Unhale Vrushali Tribhuvan, Gade Pranjal Balasaheb, Patil Tulshidas (2022). On Road Vehicle Breakdown Assistance.

Thank You...!!