A

Mini Project Report on

The Cuisine Decider

Submitted in partial fulfillment of the requirementsfor the degree of
BACHELOR OF ENGINEERING
IN
Computer Science & Engineering
Artificial Intelligence & Machine Learning

by

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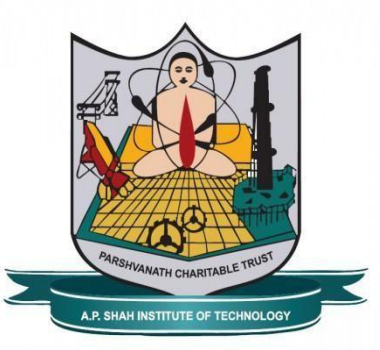

2024-2025

CERTIFICATE

This is to certify that the project entitled "**The Cuisine Decider"** is a bonafide work of Shaunak Das (23106002), Anushka Khandar (23106041), Prisha Kotekar (23106053), Sumit More (23106003) submitted to the University of Mumbai in partial fulfillment of the requirement for the award of **Bachelor of Engineering** in **Computer Science & Engineering (Artificial Intelligence & Machine Learning).**

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Project Report Approval

This Mini project report entitled "**The Cuisine Decider**" by **Shaunak Das, Anushka Khandar, Prisha Kotekar and Sumit More** is approved for the degree of ***Bachelor of Engineering*** in ***Computer Science & Engineering (AIML) 2024-2025.***

External Examiner:_____

Internal Examiner: _____

Place: APSIT, Thane

Date:

Declaration

We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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ABSTRACT

In today's fast-paced world, decision fatigue can often make the simple task of choosing what and where to eat a daunting experience. The "Cuisine Decider" app aims to simplify this process by offering a visually-driven, intuitive platform that helps users decide based on their immediate cravings. The app presents users with a series of random dishes or cuisines through appealing images. By swiping right on dishes, they find enticing and swiping left on those they don't, users curate a list of preferred foods. Upon completion, the app leverages location-based services to suggest nearby restaurants and hotels that serve the selected cuisines. This project report details the development process of the "Cuisine Decider" app, including its design, functionality, and user experience considerations. The app's goal is to provide a seamless and enjoyable solution to the common dilemma of deciding what to eat, ultimately enhancing the user's dining experience.

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CHAPTER 1
INTRODUCTION

INTRODUCTION

In the digital age, the abundance of choices can often lead to decision fatigue, particularly when it comes to selecting what and where to eat. The dilemma of making dining decisions is exacerbated by the vast variety of cuisines and dining establishments available, leading to a common scenario where individuals struggle to decide on a meal that satisfies their cravings. Recognizing this challenge, our team set out to develop an intuitive and user-friendly application, temporarily named "Cuisine Decider," designed to streamline the decision-making process for food enthusiasts. The "Cuisine Decider" app is centered around the idea of simplifying meal selection by leveraging a visually-driven, swipe-based interface. Upon opening the app, users are presented with images of random dishes or cuisines. The user can swipe right on the dishes they find appealing, and swipe left on those that do not pique their interest. This interactive and engaging approach allows users to quickly and effortlessly curate a list of preferred foods based on their immediate cravings. Once the selection process is complete, the app utilizes location-based services to suggest nearby restaurants and hotels that offer the selected dishes or cuisines. This feature not only assists users in identifying their culinary preferences but also provides practical suggestions on where they can satisfy their cravings. By bridging the gap between indecision and action, the "Cuisine Decider" app aims to enhance the dining experience by making it more personalized, convenient, and enjoyable. This project report delves into the conceptualization, design, development, and testing phases of the "Cuisine Decider" app. It also explores the technological stack, challenges encountered during the development process, and the potential future enhancements that could further improve the app’s functionality and user experience.

CHAPTER 2
LITERATURE SURVEY

LITERATURE SURVEY

2.1 HISTORY

The concept of food recommendation and restaurant discovery has evolved significantly over the years, driven by advancements in technology and changes in consumer behaviour. This section outlines the historical development of food recommendation systems and restaurant discovery platforms, providing context for the "Cuisine Decider" app.

2.1.1. Early Beginnings

In the early days, discovering restaurants and food options relied heavily on traditional methods such as word-of-mouth recommendations, print media (e.g., newspapers and magazines), and guidebooks. Prominent examples include the Michelin Guide, which dates back to 1900, offering restaurant ratings and reviews. These resources provided valuable information but were limited by their static nature and lack of real-time updates.

2.1.2. The Advent of Online Reviews

With the rise of the internet in the late 1990s and early 2000s, online review platforms began to transform how people discovered dining options. Websites like Yelp (founded in 2004) and TripAdvisor (founded in 2000) allowed users to post and read reviews, rate restaurants, and share their experiences. These platforms introduced a more dynamic and interactive approach to restaurant discovery, enabling users to make more informed decisions based on the experiences of others.

2.1.3. Food Delivery Services and Apps

The next significant shift came with the emergence of food delivery services and mobile applications in the 2010s. Companies like Grubhub (founded in 2004), Zomato (founded in 2008), and Swiggy (founded in 2014) revolutionized the food industry by providing users with the ability to order food from a wide range of restaurants directly through their smartphones. These platforms integrated features such as real-time tracking, personalized recommendations, and user reviews, making the food ordering process more convenient and tailored to individual preferences.

2.1.4. The Rise of Personalization and AI

In recent years, advancements in artificial intelligence (AI) and machine learning have further enhanced food recommendation systems. AI-driven platforms are now capable of analysing user preferences, dietary restrictions, and historical data to offer highly personalized recommendations. Services like Google Maps and recommendation engines used by apps such as Uber Eats leverage these technologies to suggest restaurants and dishes based on user behaviour and contextual information.

2.1.5. The Integration of Visual and Interactive Elements

A more recent trend in food recommendation systems is the integration of visual and interactive elements. Platforms are increasingly using images, videos, and interactive interfaces to engage users and improve their decision-making experience. Apps that incorporate swipe-based mechanisms, similar to those used in dating apps, are gaining popularity for their intuitive and engaging user experience.

2.1.6. Current Trends and Future Directions

As technology continues to advance, the future of food recommendation and restaurant discovery is likely to be shaped by innovations such as augmented reality (AR), virtual reality (VR), and further integration of AI. These technologies have the potential to create even more immersive and personalized dining experiences, enabling users to explore and interact with food options in new and exciting ways. The historical evolution of food recommendation systems highlights the shift from traditional methods to dynamic, technology-driven solutions. The "Cuisine Decider" app builds on these advancements by offering a visually engaging and personalized approach to meal selection, addressing the modern consumer's desire for convenience and tailored recommendations.

2.2 Literature Review

The literature review provides an in-depth analysis of existing research, platforms, and technologies related to food recommendation systems and restaurant discovery apps. This section examines the methodologies, features, and innovations that have shaped the current landscape, identifying both strengths and gaps that the "Cuisine Decider" app aims to address.

2.2.1. Food Recommendation Systems

(Ricci, F., Rokach, L., & Shapira, B. (2011). Introduction to Recommender Systems Handbook. Springer US, Hariri, N., Mobasher, B., & Burke, R. (2012). Context-aware recommendation based on review mining and sentiment analysis. Proceedings of the 22nd ACM International Conference on Information & Knowledge Management (CIKM), 125-134.)

Food recommendation systems have been the subject of extensive research, particularly in the context of enhancing user experience and personalization. According to references, traditional recommendation systems often relied on collaborative filtering, which suggests items based on the preferences of similar users. However, these systems faced challenges such as cold-start problems, where insufficient data on new users or items limited the effectiveness of recommendations. More recent approaches have incorporated content-based filtering, where recommendations are generated based on the attributes of the items themselves, such as cuisine type, ingredients, or nutritional content. Hybrid models, which combine collaborative filtering and content-based methods, have also gained popularity for their ability to provide more accurate and diverse recommendations.

2.2.2. The Role of Machine Learning and AI

(Wang, Y., Wu, L., & Xie, X. (2019). A Survey on Location-Based Recommender Systems. IEEE Transactions on Knowledge and Data Engineering, 31(2), 284-304)

The integration of machine learning (ML) and artificial intelligence (AI) into food recommendation systems has significantly improved their performance and user satisfaction. AI-driven systems can analyse large datasets, including user preferences, behavioural patterns, and contextual factors (e.g., time of day, location), to offer highly personalized suggestions. Deep learning models, in particular, have been effective in capturing complex relationships between users and food items, leading to more precise and relevant recommendations.AI is also used to enhance the visual appeal of food recommendation platforms. For instance, platforms like Foodvisor and Yummly use image recognition technology to analyse food photos and suggest similar dishes or recipes, making the user experience more interactive and engaging.

2.2.3. Mobile Food Discovery Apps

(Jain, R., & Gaikwad, P. (2019). A Study on User Satisfaction of Food Delivery Apps in Mumbai. International Journal of Trend in Scientific Research and Development (IJTSRD), 3(5), 857-860)

Mobile applications such as Zomato, Swiggy, and Uber Eats have revolutionized how users discover and access food. These apps combine convenience with comprehensive features, including restaurant search, user reviews, ratings, and online ordering. According to references, the success of these platforms is largely due to their ability to integrate multiple functionalities, such as geolocation services, personalized recommendations, and user-generated content, into a single user-friendly interface. However, while these apps offer extensive options, they can sometimes overwhelm users with too many choices. This phenomenon, known as the "paradox of choice," can lead to decision fatigue, where users struggle to make a choice due to the abundance of options. The "Cuisine Decider" app addresses this issue by simplifying the decision-making process through a visual and intuitive swipe mechanism.

2.2.4. Visual-Based Recommendation Systems

(Borth, D., Ji, R., Chen, T., Breuel, T., & Chang, S.-F. (2013). Large-scale visual sentiment ontology and detectors using adjective-noun pairs. Proceedings of the 21st ACM International Conference on Multimedia (MM ’13), 223-232.)

The use of visual elements in recommendation systems is becoming increasingly important, particularly in the food industry where presentation plays a critical role in decision-making. According to references, visual content, such as images and videos, can significantly influence users' food choices, making it a powerful tool for recommendation platforms.

Apps like Tinder have popularized the swipe-based interface, where users make quick decisions based on visual appeal. This concept has been adapted by food recommendation apps like Dine and Crave, which use a similar approach to help users discover new dishes or restaurants. The effectiveness of this method lies in its simplicity and engagement, as users can quickly browse through options without feeling overwhelmed.

2.2.5. Location-Based Services and Context-Aware Recommendations

(Y. Zheng, X. Xie. (2011) Location Based System: A survey)

Location-based services (LBS) are a critical component of modern food discovery apps, enabling them to provide context-aware recommendations. LBS utilize the user's current location to suggest nearby dining options, taking into account factors such as proximity, popularity, and user preferences. Context-aware systems can also adapt recommendations based on other contextual information, such as time of day, weather conditions, and social settings.

The "Cuisine Decider" app leverages LBS to enhance the relevance of its recommendations, ensuring that users receive suggestions for restaurants and hotels that are not only aligned with their culinary preferences but also conveniently located.

2.2.6. Gaps and Opportunities

Despite the advancements in food recommendation systems and discovery platforms, there are still several gaps and opportunities for innovation. Many existing platforms prioritize functionality over user experience, leading to interfaces that can be complex and overwhelming. Additionally, while AI and ML have improved personalization, there is still a need for more intuitive and user-friendly methods of interaction, particularly for users who may not have specific dietary preferences or who are looking for spontaneous meal ideas.

The "Cuisine Decider" app addresses these gaps by combining a visually appealing, swipe-based interface with AI-driven personalization and location-based recommendations. By focusing on user engagement and simplicity, the app offers a novel approach to food discovery that caters to modern consumer preferences.

CHAPTER 3
PROBLEM STATEMENT

PROBLEM STATEMENT

3.1 Problem Overview

In today's fast-paced world, choosing where and what to eat has become an increasingly complex decision-making process, especially with the plethora of dining options available through various food delivery and restaurant discovery apps. While these platforms offer extensive choices, they often overwhelm users with an excessive amount of information, leading to decision fatigue—a phenomenon where the abundance of options makes it difficult for users to make a satisfactory choice. This problem is further compounded when users are indecisive or unsure of their specific cravings, resulting in frustration and a less enjoyable dining experience.

3.2 Limitations of Existing Solutions

Existing food recommendation systems and restaurant discovery apps, such as Zomato, Swiggy, and Uber Eats, provide a wide array of choices based on filters like cuisine, ratings, and proximity. However, these platforms often prioritize functionality and comprehensiveness over simplicity and user experience. As a result, users may find themselves spending an inordinate amount of time browsing through menus, reading reviews, and comparing options, which can detract from the convenience these apps are supposed to offer. Moreover, many of these platforms rely on text-based searches and list-based interfaces, which may not be ideal for users who prefer a more visual and intuitive approach to decision-making.

3.3 The Need for a Visual and Intuitive Solution

To address these challenges, there is a need for a solution that simplifies the food selection process by leveraging visual engagement and intuitive interactions. A system that allows users to make quick decisions based on the visual appeal of dishes or cuisines, without the burden of excessive choices, can enhance the user experience and reduce decision fatigue. Additionally, the solution should integrate personalization features and location-based services to provide relevant and context-aware recommendations that cater to the user's immediate desires and convenience.

The "Cuisine Decider" app is designed to address these issues by offering a swipe-based, visually-driven interface that allows users to discover dishes and cuisines effortlessly. By focusing on user engagement through images and a simple interaction mechanism, the app aims to streamline the decision-making process, making it easier and more enjoyable for users to decide what and where to eat.

CHAPTER 4
EXPEIMENTAL SETUP

EXPERIMENTAL SETUP

4.1 Hardware Setup

Development Machine: A computer with at least 8GB RAM, 256GB SSD, and a multi-core processor for efficient coding and testing.
Mobile Devices: Android and iOS devices are used to test the app's performance and compatibility across different platforms and screen sizes.

4.2 Software Setup

IDE: Visual Studio Code or Android Studio for writing and debugging Dart code.
Version Control: Git and GitHub were used for source code management and collaboration.
Programming Languages: JavaScript, with React Native as the framework for cross-platform app development.
Backend Services: Supabase was used for database management, authentication, and real-time updates.
APIs: Google Places Search API was integrated for fetching nearby restaurant and hotel data.
Design Tools: Figma was employed for UI/UX design, ensuring a seamless transition from design to code.

CHAPTER 5

PROPOSED SYSTEM & IMPLEMENTATION

PROPOSED SYSTEM & IMPLEMENTATION

The "Cuisine Decider" app allows users to swipe through a limited set of cuisines or dishes. If a user swipe left, they skip the option. If they swipe right, the app instantly suggests nearby restaurants within a 1 km radius that serve the selected cuisine.

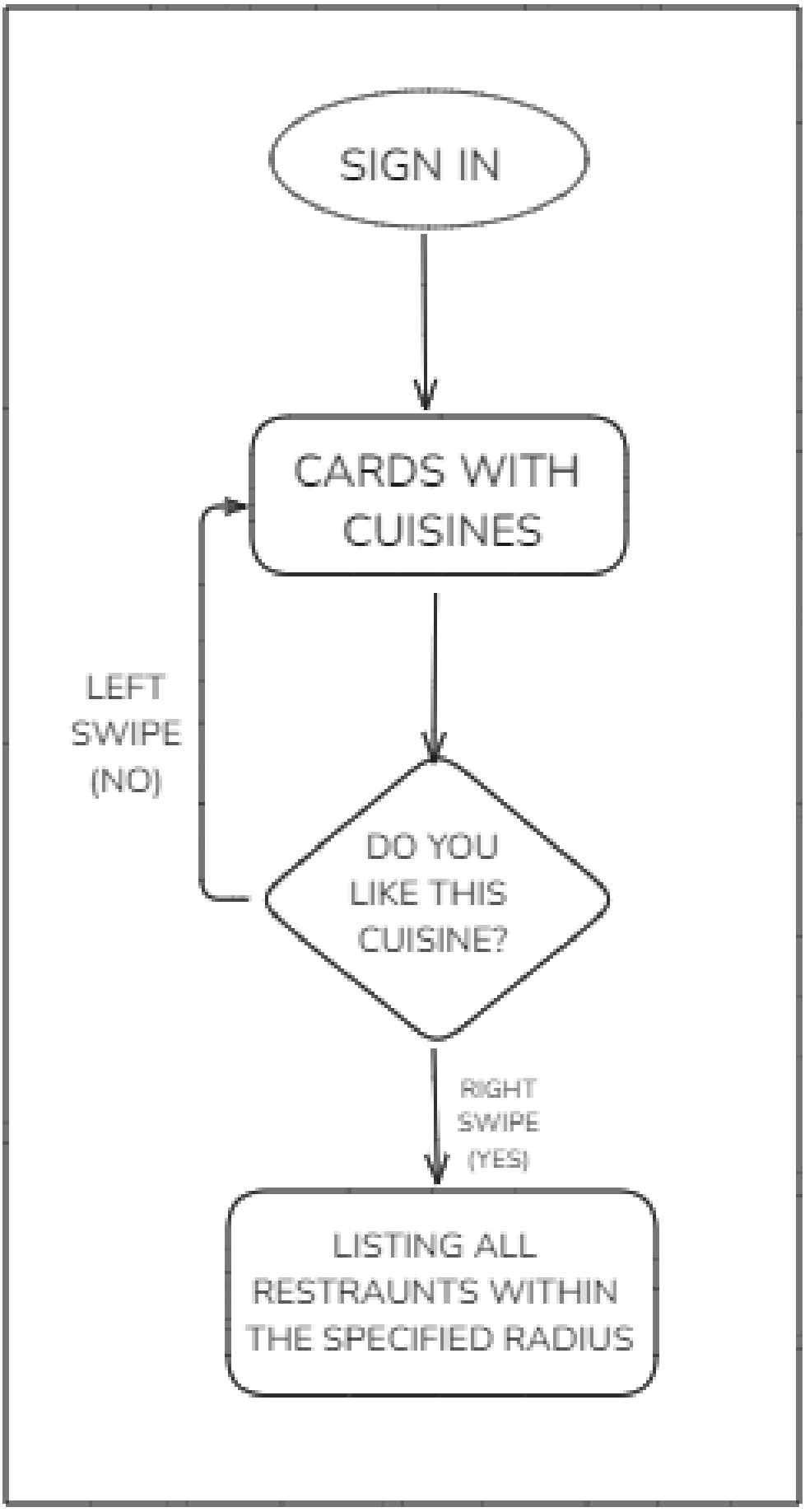
Implementation

1. Front-end (React Native):
Users swipe through a limited number of dishes/cuisines.
Clean, intuitive interface that allows users to easily choose or skip options.

2. Back-end (Supabase):
Stores cuisine data and user interactions (swipes).
Tracks liked dishes to suggest relevant cuisines in future sessions.

3. Google Places API:
Fetches nearby restaurants (within 1 km) that serve the selected cuisine.
Displays relevant restaurant details (distance, ratings, etc.).

4. Flow:
Users are presented with a few cuisines.
Swipe left to skip, swipe right to select.
Upon selecting a cuisine, the app directly shows nearby restaurant suggestions serving that dish within 1 km.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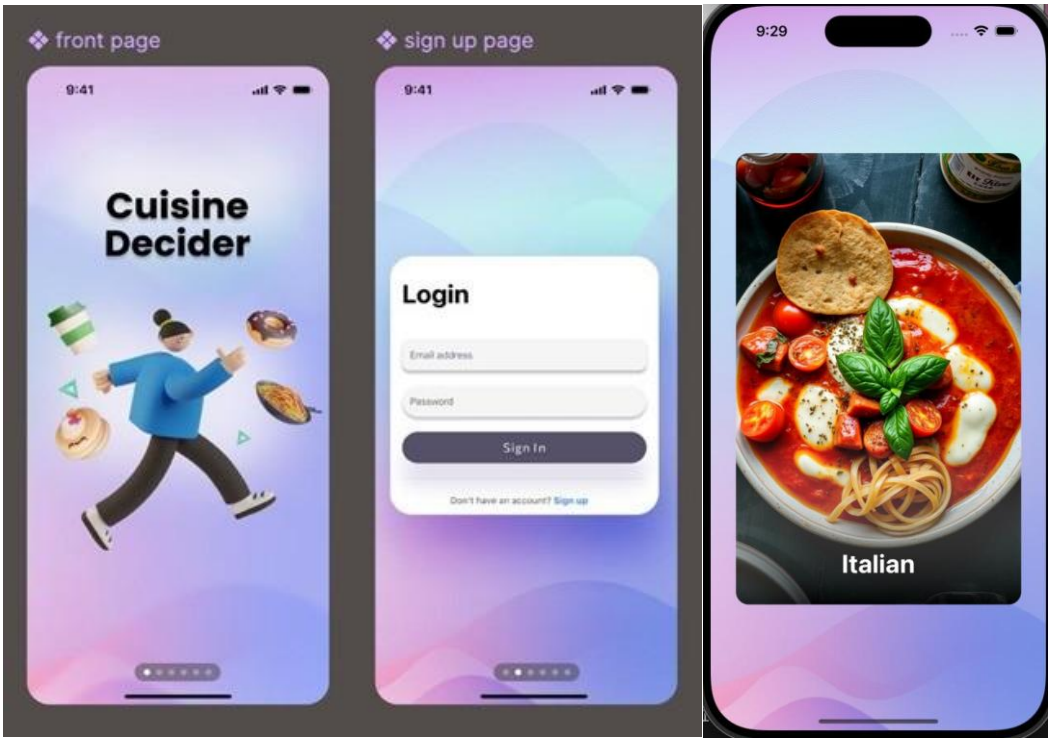
DO YOU LIKE THIS CUISINE?
RIGHT SWIPE (YES)
LISTING ALL RESTRAUNTS WITHIN THE SPECIFIED RADIUS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Don't have an account? Sign up
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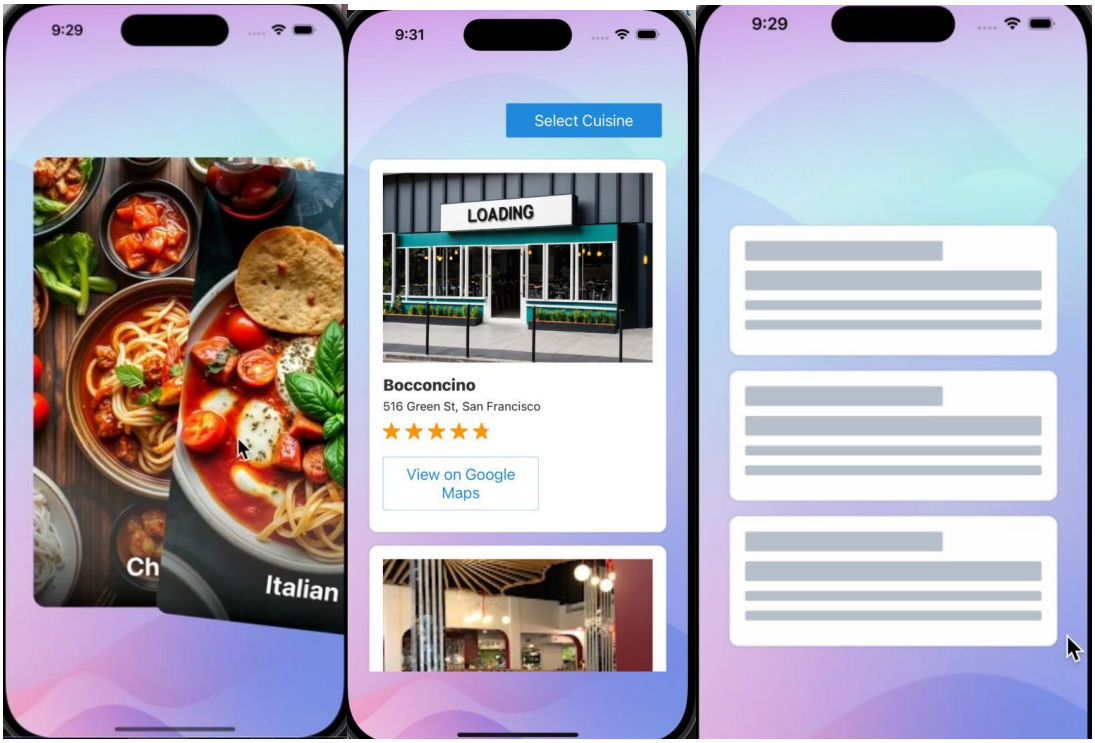
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View on Google Maps
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CHAPTER 6
CONCLUSION

CONCLUSION

The "Cuisine Decider" app effectively addresses the challenge of choosing where and what to eat by leveraging a user-friendly swipe interface to match users with their desired cuisines. By displaying a variety of dishes and cuisines, the app simplifies the decision-making process and personalizes dining suggestions. Upon user interaction, the app provides recommendations for nearby restaurants and hotels that offer the selected food, enhancing the dining experience by aligning with users' preferences. This innovative approach not only caters to individual cravings but also aids in discovering new dining options, making "Cuisine Decider" a valuable tool for culinary decision-making.

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[7] Yuan, F., McCaffrey, T., & Vos, P. “Visual Recommender Systems: Advancements in Artificial Intelligence and its Applications”. Journal of Visual Communication and Image Representation, 62, 46-56(2019).