Lab 1 – TasteBuddies Product Description

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1   Introduction

Going to restaurants is an important part of our social fabric, contributing to a restaurant industry that is worth over $1.5 trillion (Auguste, 2024). This market thrives on people dining out for special occasions or simply people going out to bond with loved ones, an activity that promotes well-being and happiness. A 2017 University of Oxford study by Robin Dunbar surveyed 2,000 United Kingdom adults, asking them to rate their life satisfaction, the reliability of their close relationships, and their engagement with their local community. Participants also reported how often they had group meals, the size of these gatherings, and their happiness during them. The study found that frequent group meals correlated with greater happiness and stronger social ties, with 69% of respondents reporting high life satisfaction. Additionally, 76.4% agreed that sharing a meal was a good way to bring people closer together, reinforcing the role of communal dining in strengthening well-being and social bonds. A nationwide survey conducted by Home Run Inn Pizza in 2023 revealed that Gen Z individuals dine on restaurant-prepared food, including takeout, dine-in, or delivery, an average of 2.1 nights per week, while Millennials do so 1.9 nights per week. One of the top five reasons cited by both groups was time with 75% of Gen Z and 72% of Millennials saying that they don't have enough time to cook at home. These factors contribute to the frequency of dining out, as individuals seek convenient options that accommodate their schedules and diverse culinary preferences. However, this experience is often hindered by generic reviews that flood the internet, offering little value or insight for users seeking a meaningful perspective on a restaurant (Beaton, 2018). The generic review issue compounded with the escalating costs associated with dining out has led many individuals to become more cautious about trying unfamiliar restaurants, as the potential for a disappointing experience now carries a higher financial risk. This is supported by data from a Technomic

survey indicating that nearly half of consumers (48%) are reducing their restaurant visits due to inflationary pressures (Rakoczy, 2023). The solution to these problems is TasteBuddies, an app that personalizes restaurant and dish recommendations based on individual tastes, ensuring users find options they are more likely to enjoy. Instead of relying on generic reviews, TasteBuddies connects users with others who share similar taste profiles, providing more relevant and reliable restaurant and dish recommendations. TasteBuddies allows users to create taste profiles based on their preferences, dietary restrictions, and past dining experiences. It uses machine learning to refine recommendations over time, ensuring meaningful recommendations. The app also includes group matching, helping users find restaurants that cater to everyone in their party. To enhance the dining experience, TasteBuddies offers real-time updates on dish availability, restaurant crowd levels, and cleanliness, reducing uncertainty before a restaurant visit. Restaurant engagement notifications allow users to receive updates on seasonal dishes and menu changes based on their past preferences. By providing personalized, data-driven recommendations, TasteBuddies eliminates the guesswork from dining out, helping users avoid disappointing meals and dine with confidence.

2   Product Description

TasteBuddies is a dining recommendation application that is designed to help diners find new restaurants and dishes without the guesswork. The app uses matching algorithms and machine learning to provide tailored recommendations based on a user's taste profile, dining preferences, and dietary restrictions. TasteBuddies also allows users to add their TasteBuddies to a group making it easy for them to find restaurants they will all enjoy together. Unlike other food review platforms that rely on generic ratings and reviews, TasteBuddies connects diners with fellow TasteBuddies whose aligned preferences ensure they will receive relevant reviews and

recommendations. TasteBuddies also incorporates crowdsourced and real-time data to give live

updates on how crowded a restaurant is, dish availability, and cleanliness. By alleviating the risk

of trying a new restaurant, the difficulty of finding a restaurant to eat at as a group, and providing

relevant reviews, TasteBuddies allows diners to dine with confidence.

2.1   Key Product Features and Capabilities

TasteBuddies offers many features designed to provide a personalized and intuitive dining

experience. Its capabilities are categorized into three categories: taste profiles, live updates, and

intelligent systems, each contributing to providing the diner with a meaningful experience.

Starting with taste profiles, TasteBuddies allows users to create detailed taste profiles by

inputting their dietary restrictions, ranking of the five taste flavors, and their preferred cuisine.

These profiles serve as the foundation for the app's personalized recommendations, evolving

dynamically through machine learning and user history. By analyzing user behavior and

preferences, the app can continuously improve taste profiles to ensure accurate and relevant

suggestions. Additionally, recommendations leverage data clustering from users with similar

profiles, improving the quality of results. The application also provides filtering options to cater

to individual needs, such as allergies, dietary restrictions, and preferred dining experiences. For

instance, users with gluten intolerance or vegan preferences can customize their

recommendations, ensuring safety and satisfaction while dining.

Real-time information and live updates are a core feature of TasteBuddies' functionality.

The daily dish feed offers a curated selection of relevant reviews and dishes from local

restaurants, updated daily to keep users informed about the options. Crowd-sourced data further

enhances the recommendations, combining user reviews and restaurant-provided information to

deliver the most accurate insights. TasteBuddies integrates seamlessly with Google API to

enhance its location-based services. This integration allows users to explore nearby dining options, navigate to chosen restaurants, and access additional details such as operating hours and contact information.

TasteBuddies uses intelligent systems to ensure recommendations are not only accurate but also contextually relevant. The app prioritizes reviews from users with similar taste profiles, offering reliable and trustworthy insights while minimizing the influence of irrelevant opinions. Group preference matching is another standout feature, allowing users to find dining options that align with the collective tastes of a group, making it easier to plan family outings or social gatherings.

TasteBuddies combination of taste profiling, live updates, and intelligent systems makes it a versatile and user-centric platform, offering a dining experience tailored to individual preferences and real-time needs. These features work together to simplify decision-making for diners while enhancing culinary exploration for diners.

2.2   Major Components (Hardware/Software)

TasteBuddies will require the use of cloud hosted servers and a cloud hosted database. The servers will contain the three important algorithms. The recommendation algorithm which processes user taste profiles and user activity data to deliver tailored restaurant and dish recommendations. The taste matching algorithm that identifies and pairs users with similar preferences to enhance personalized suggestions. Lastly, it contains the group dining algorithm that combines profiles from multiple users to recommend restaurants suitable for the group. The servers will also contain the mobile application backend, providing APIs that connect the user-facing frontend with the database.

Figure 1

Major Functional Components Diagram
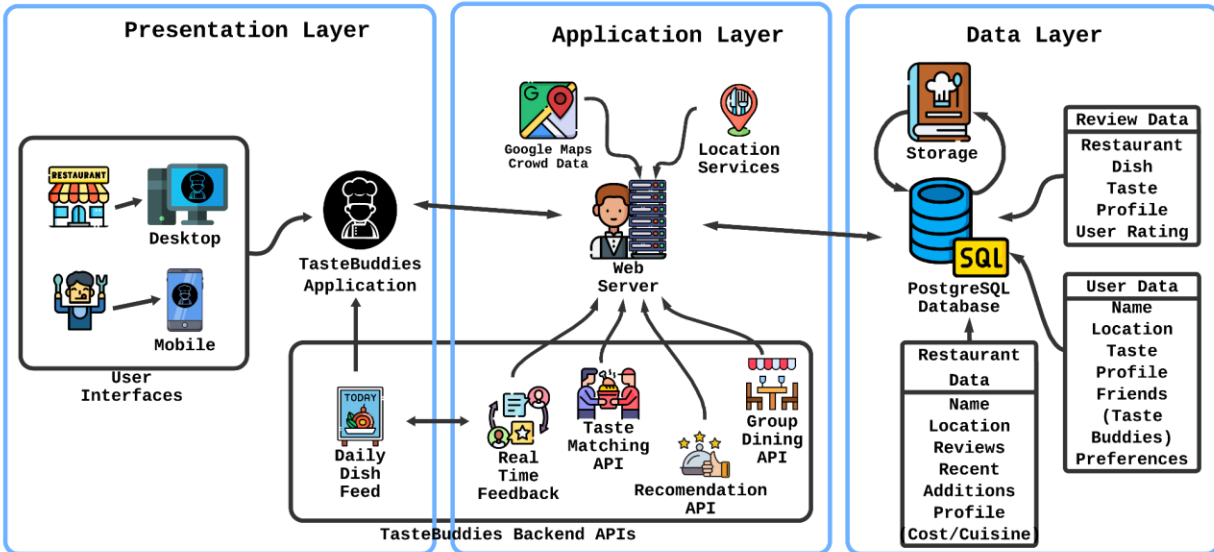
As can be seen in Figure 1, TasteBuddies employs the three-tier architecture approach to structure the functional components, ensuring scalability, flexibility, and maintainability. The architecture consists of the Presentation Layer, Application Layer, and Data Layer, each designed to handle individual responsibilities within the system. The Presentation Layer represents the user-facing interface, where diners and restaurant operators interact with the platform. It includes a mobile application for users to set taste profiles, browse personalized recommendations, and engage with reviews, as well as a web application tailored for restaurants to manage profiles and update seasonal menus. The Application Layer functions as the core processing engine, integrating key services and APIs to enable data flow. This layer includes location services to ensure geographically relevant content and the three primary APIs. Lastly, the Data Layer serves as the fridge, built on a PostgreSQL database to securely store user profiles, restaurant information, and reviews. This layer ensures efficient data retrieval and updates as users interact with the platform. For example, when a user updates their taste profile

or interacts with the Daily Dish Report, the data flows through the web server to the database for

storage, and APIs retrieve and process this data to deliver refined recommendations back to the

user. This architecture ensures TasteBuddies provides an uninterrupted, personalized, and

dynamic user experience.

3   Identification of Case Study

TasteBuddies is designed for a broad range of users, each with unique dining needs and

preferences. Diners form the primary audience, including adventurous eaters eager to explore

new cuisines and conservative eaters who prefer familiar options. Travelers benefit from

narrowing down unfamiliar restaurants to match their limited dining opportunities, while foodies

use the platform to discover highly rated dishes and connect with like-minded enthusiasts.

Groups, such as families or friends, rely on TasteBuddies to find restaurants that cater to

everyone's tastes, streamlining the decision-making process. Beyond diners, the app also serves

restaurants, particularly those seeking to attract specific clientele. Additionally, local economies

and nearby stores benefit from the increased foot traffic generated by TasteBuddies

recommendations, fostering stronger community ties. For restaurants, the app offers

opportunities to provide live updates, conduct targeted diner outreach, and enhance customer

satisfaction by connecting with diners who are more likely to enjoy their dishes.

In the future, community event organizers could leverage TasteBuddies to promote food-

related gatherings, while global expansion could attract international travelers and diners.

Furthermore, food supply vendors might integrate with the platform to better understand demand

patterns and connect with restaurants to provide relevant products. By addressing a wide range of

user needs and fostering connections across the dining ecosystem, TasteBuddies has the potential

to become a versatile and indispensable tool in the culinary world.

4   Glossary

Crowdsourced Data: User-generated data on restaurant wait times, dish availability, and quality, among others.

Curated Reviews: Reviews presented and weighted based on users with similar Taste Profiles.

Daily Dish Report: Provides live updates from TasteBuddies and restaurants such as new reviews, specials, and dishes.

Data clustering: grouping diners in a group that is similar to determine taste profiles and recommendations

Dining Filters: Ability to filter restaurants by location, cuisine, occasion, and how busy they are.

Generic reviews: The issue of unauthentic online reviews, which the app addresses by focusing on personalized recommendations.

Google API: An external tool integrated into the app that provides real-time data on how busy a restaurant is.

Group Dining Algorithm: Algorithm that combines multiple users profiles and provides reviews for restaurants and dishes that best match the group preferences.

Group Indecision: Conflicting opinions and preferences of a group lead to more difficult decision making which causes delays.

High financial risk: The risk of losing/wasting money based on a decision.

ODU: Old Dominion University.

Overwhelming choice: An excessive number of options to choose from which makes decisions difficult.

Recommendation Algorithm: Algorithm that provides users with relevant recommendations based on their matched TasteBuddies, taste profile, and interacted content.

Restaurants: Venue that provides a sit-down dining experience where primary revenue is prepared food. It must have a nice bathroom.

Safe space: Space where people are free to express and enjoy their interest without fear of being judged.

Social engagement: Promote users to interact with one another and be involved within the community.

Super TasteBuddies: Taste influencers or food experts that have specialized knowledge and can recommend specific cuisines or dishes.

Tailored Recommendations: Personalized recommendations based on a user's taste profile.

TasteBuddies: Users with highly similar taste profiles which lead to improved recommendations based on aligned tastes.

Taste Matching Algorithm: A key algorithm of the app that pairs users based on similar taste profiles.

Taste Profiles: Personalized profiles created by each user based on their taste preferences, such as preferences for spicy, sweet, salty, etc.

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