Lab 1 – TasteBuddies Product Description

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1   Introduction

A 2016 national UK survey of 2,000 adults, balanced for age, gender, and distribution, found that 75% of participants believed sharing a meal is the best way to spend time with someone (Dunbar, 2017). When thinking about a special occasion shared with family, chances are food was involved, and for good reason: food brings people together in a meaningful way. Communal dining forges social bonds and connects people within a community, which contributes to an individual's overall well-being (Thurnell-Read, 2021; Dunbar, 2017). Restaurants in particular provide a reliable safe space, promoting social engagement and a place to increase community involvement (Thurnell-Read, 2021). These social networks are instrumental to combat physical and mental illness (University of Oxford, 2017). Communal dining benefits groups and individuals, positioning restaurants as a pillar to community building.

While there are benefits to dining at home, there are factors that impact feasibility when compounded with group dining. Cooking requires both skill and time, which some people may be lacking. According to a survey conducted by Home Run Pizza seen in Figure 1, the greatest reason Generation Z and Millennials do not cook at home is time, followed by culinary skills. Kitchen and dining space may be limited, making it challenging to accommodate guests. Lastly, people have differing tastes, so a set menu may not be appreciated by all guests, making dining at home stressful, ultimately resulting in some regretful hosts (Tuckey, 2023). Thus, meeting people over food may be more enjoyable and feasible in a restaurant setting.

Figure 1

Top 5 Reasons Gen Z & Millennials Don't Cook More at Home
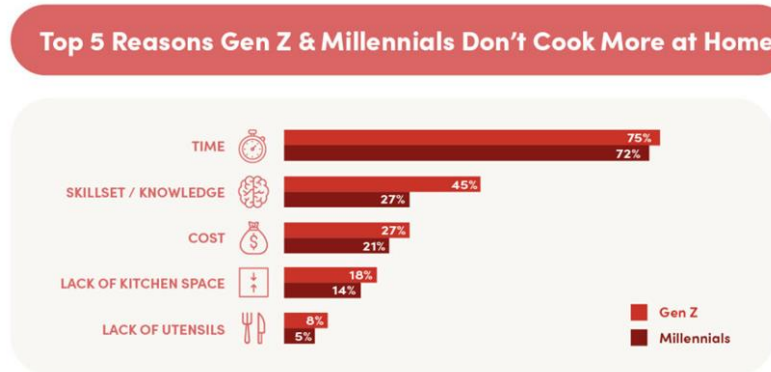
Unfortunately, restaurant prices have risen 4.1% over the past year (see Figure 2), outpacing

regular inflation and wages, making dining out a financial risk (Grieve, 2024). The possibility of a

disappointing dining experience may drive patrons away or make them hesitant to try new dishes or

venues, causing more people to miss the benefits of social dining, increasing the risk of social

isolation and loneliness (Thurnell Read, 2021). Furthermore, dwindling support of restaurants may

have an adverse effect on communities that rely on them for community engagement.

Figure 2

Food prices have risen more than wages and overall inflation
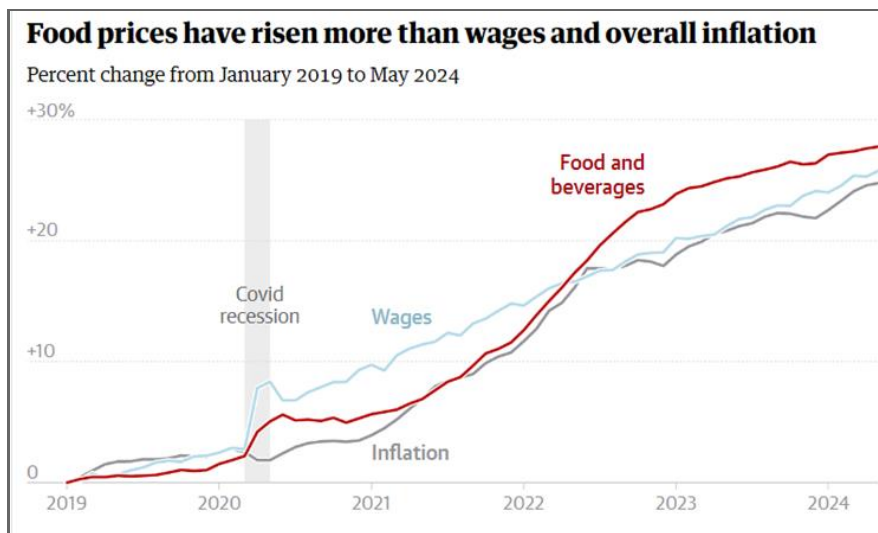
To further complicate the restaurant experience, there is the issue of overwhelming choice when attempting to select a restaurant or a dish. Combined with the expense, the choice of selecting a nearby restaurant or an item from a menu may provide choice overload to patrons, paralyzing them into choosing their default option for a restaurant and dish which prevents them from potentially discovering new culinary experiences (Kras, n.d).

Diners may seek to narrow their choices with the use of reviews, but generic reviews impede a confident decision. Time may be lost trawling through multiple review sites often laden with AI generated reviews geared towards promotion or defamation (Vaghasiya, 2024). Even when reviews come from real people, every individual has unique tastes. The reviewer's preferences may not match your own, making generic reviews an unreliable tool for decision-making.

To further delay decision making, there are factors to consider when dining as a group. A venue must be sourced appropriate for the occasion, party size, and most of all: tastes. Splitting the bill is already a tense occasion, and it is made worse if a group member was unhappy with the venue or their dish. Unfortunately, nothing is currently on the market to help relieve the stress of choosing an establishment for all group members that accommodates tastes as well as other crucial concerns like allergies.

To address these problems, personalization is needed. An app that can access a diner's taste profile and tailor recommendations based on their individual preferences to provide choices that are likely to please. Building upon individual personalization, people may be linked to present a group recommendation, eliminating the stress of choosing a restaurant that suits everyone. Matching a diner to a restaurant or dish provides the benefit of increased revenue for restaurants, employees, and the local economy; reviving restaurants to maintain a place for community trust and engagement by building consumer confidence, all while devouring a delectable dish. This shall be achieved by an app called TasteBuddies, where people may dine with confidence.

2   Product Description

TasteBuddies is a mobile application that restores confidence in the restaurant experience by personalizing recommendations for diners. It recommends restaurants the diner may enjoy, in addition to dishes within those restaurants that closely align to the diner's taste. This expedites the ordering process and helps eliminate poor choices. Additionally, the app has the ability to recommend a restaurant to a group of registered users, making it easier for large groups to find a restaurant that suits everyone's tastes and needs without compromising individual preferences. TasteBuddies also utilizes live updates on the latest news that may affect the dining experience.

2.1   Key Product Features and Capabilities

To begin, diners may create a taste profile prompted by users selecting their favorite restaurants and dishes. Since tastes are not static, machine learning is implemented to continuously refine taste profiles based on user interactions with the app. Recommendations are then generated using collective data from users with similar taste profiles. Users may filter recommendations based on allergies, dietary restrictions, and their preferred dining experience.

Live updates about restaurants, dishes, and buddies followed buddies are compiled in a feature called the Daily Dish. The Daily Dish may include crowdsourced data, such as real-time topics of interest related to a restaurant. This feature can alert diners to events or potential disappointments, such as a dish being unavailable at a particular time. Google API is utilized to show how busy a business can be at a time which may affect wait times.

Intelligent systems are engaged to power our recommendation engine by prioritizing reviews and matching users to restaurants and dishes. Reviews are ranked based on the similarity of the reviewer's taste profile to the user's, ensuring that reviews from users with different preferences have less influence. The app can also analyze multiple users' preferences to recommend a restaurant that suits an entire group for an occasion, leading to effortless decision making. Our

systems may also take into account the user's mood, if prompted, to generate recommendations based on how the user is feeling as mood is known to affect appetite (Gardner, 2024).

These key features reduce hesitation and build trust when dining out by tailoring recommendations to users' preferences. This emboldens users to try new restaurants and dishes while allowing them to view live updates before venturing out to a dining venue.

2.2   Major Components (Hardware/Software)

TasteBuddies implements a three-tier structure for scalability and security: the presentation layer, application layer, and database layer as illustrated in Figure 3.

Figure 3

Major Functional Components Diagram (MFCD)
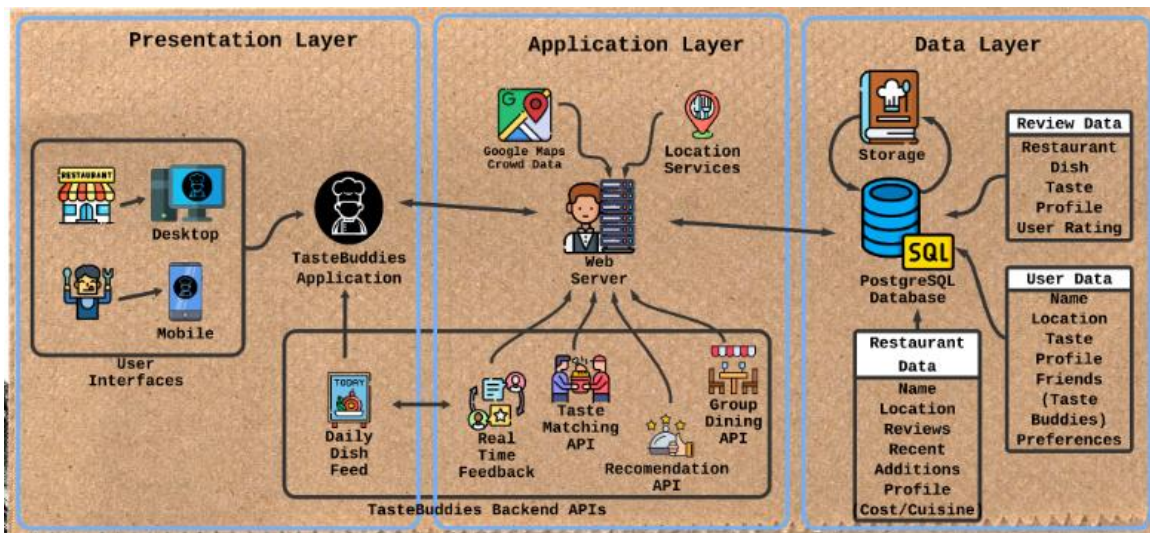
The Presentation layer of our software includes the user interface, social features, and dining filters. The primary interface for diners will be a smartphone app featuring multiple interactive pages. These pages will feature social features, such as TasteBuddies, and allow users to update and read the Daily Dish Feed. Diners will also have access to filters that let them refine their dining preferences based on location, cuisine, or occasion.

Figure 4

User interface sample screens
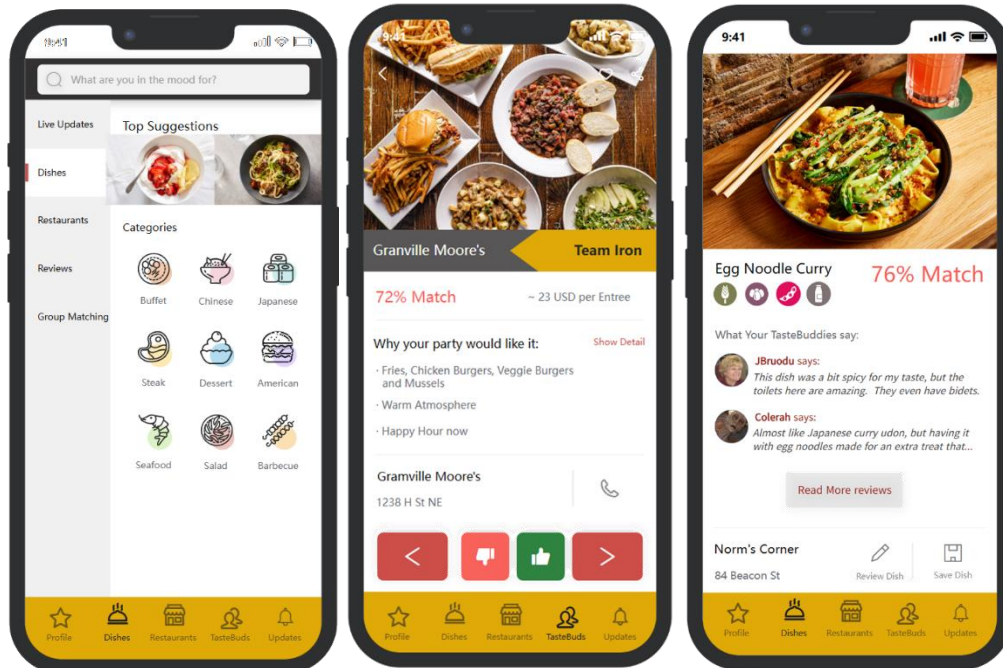
The restaurant user interface will be presented as a mobile web app that enables restaurants to view reviews, post specials to the Daily Dish, and verify their dishes. Restaurant customers who subscribe to the platform may also view their restaurant's statistics and promote more dishes.

The application layer contains several components responsible for generating our content. At the core of the application layer is the web server which hosts our application. Algorithms are run in this layer for our taste matching, group dining, and recommendation engines. Google API will be integrated for location services, allowing the app to be location-aware and further personalize recommendations. Google API will also be used to generate analytics, enabling developers to monitor user interactions with TasteBuddies and refine the model to optimize the user experience.

The database layer serves as the foundation from which the program operates, which securely store all of the user and customer data. This data will be added, accessed, and processed by the application layer's algorithms to deliver a seamless and personalized user experience.

3   Identification of Case Study

TasteBuddies is primarily designed around diners. Be they people who love trying new things or those who like the safety of known foods. Its reach extends to travelers who are estimated to use 25% of their budget on food, and foodies who are invested in the most delectable dishes in town (U.S. Travel Association, 2019). The group matching algorithm is tailored to benefit diners who are in large groups so that an appropriate dining establishment may be enjoyed by all parties. Restaurants also play an integral role in TasteBuddies and are the primary customers. Restaurants desiring higher visibility with targeted clientele or those who generate dynamic menus may utilize TasteBuddies to update their menus, verify their dishes, and view metrics based on user interaction.

Other stakeholders include the community and local economy. By revitalizing dining, the local economy stands to benefit from increased foot traffic bringing increased sales and possibly heightened property values. Communal dining strengthens a person's bonds with the community meaning restaurants will provide safe spaces for groups to gather and community events to be held, further fostering community wellbeing and interconnectivity.

TasteBuddies will be used to generate recommendations that are personalized to the diner. By utilizing its matching engine that aligns an individual's taste to others, it can help a diner with decisions regarding picking a dish or restaurant. It will be used by groups to add members and generate a recommendation of a restaurant that suits more than one diner, meaning all parties are considered and can feel confident that an enjoyable dining experience can be had for all members without significant compromise.

TasteBuddies is still helpful for those who have no struggle with decision making by providing live updates and opt-in notifications so that diners may see real time information about a restaurant, dish, or fellow TasteBuddy they're following. Updates are provided real-time by restaurants or crowdsourced by other users. These updates allow the user to make informed

decisions that reduce disappointing situations such as realizing a preferred dish is sold out while also increasing happy situations like being notified when a seasonal item is back on the menu.

Restaurants will use TasteBuddies to provide live updates, score targeted client outreach , and increase customer satisfaction. With access to data such as user reviews and being matched with diners who are likely to enjoy the food of an establishment, the restaurant stands to gain greater insights into their menu and will be able to adjust their menu according to the data provided to paying customers.

The future of TasteBuddies is dependent upon user acquisition to make the app function as expected. With a strong user base, the app can be used as a valuable tool by community organizers to host events at restaurants that can handle large crowds found through TasteBuddies.

As TasteBuddies expands globally, it will become a trusted travel companion that brings people together so they can enjoy the local dining scene in any far flung corner of the world. Additionally, TasteBuddies could provide food vendors with valuable analytics on regional supply and demand, optimizing ingredient distribution to restaurants.

Overall, TasteBuddies has the potential to revolutionize the dining experience by instilling confidence in every choice.

4   Product Prototype Description

5   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 more 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

e 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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