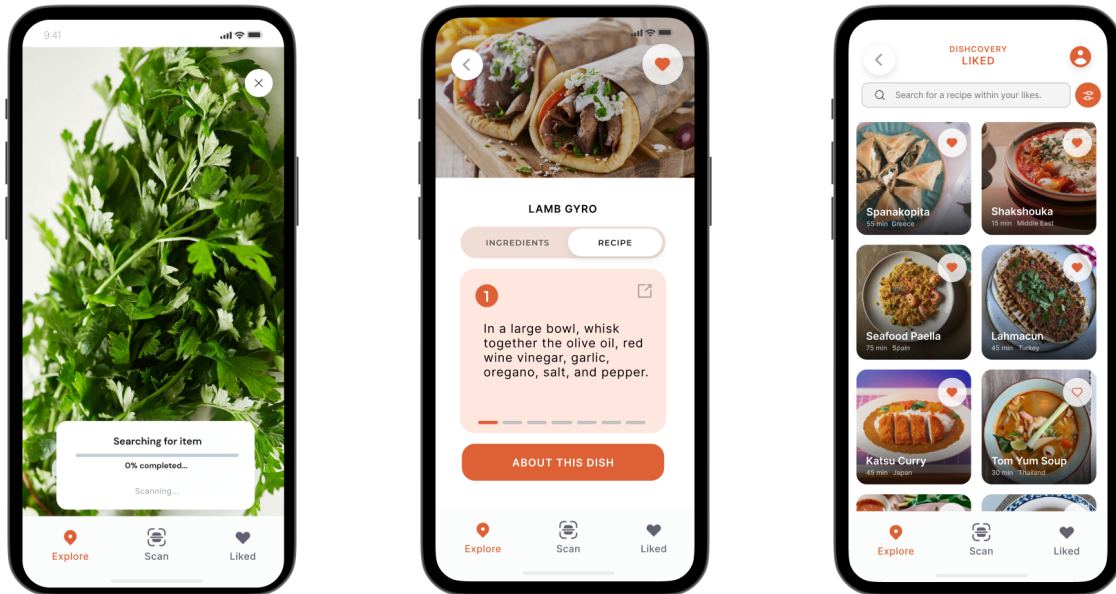


Dishcovery

Your cultural culinary companion



The Problem

When it comes to cooking, people may struggle with finding the motivation to cook, feeling connected to the food they make, or feeling secure in their culinary capabilities. For Dishcovery, we focused on helping people cook authentically and be excited about cooking food from other cultures.

In our needfinding, we found that people stray away from cooking foods that they fear they may prepare inauthentically. We also found that many people would not try new foods or ingredients from other cultures in fear that they would not like them. On the other hand, for people interested in learning more about and seeking further engagement with diverse cultures, the internet is over-saturated with recipes and one may not know which sources to trust.

The overarching problem was clear: **cooking with recipes or ingredients from other cultures can be intimidating**, especially when trying to ensure authenticity.

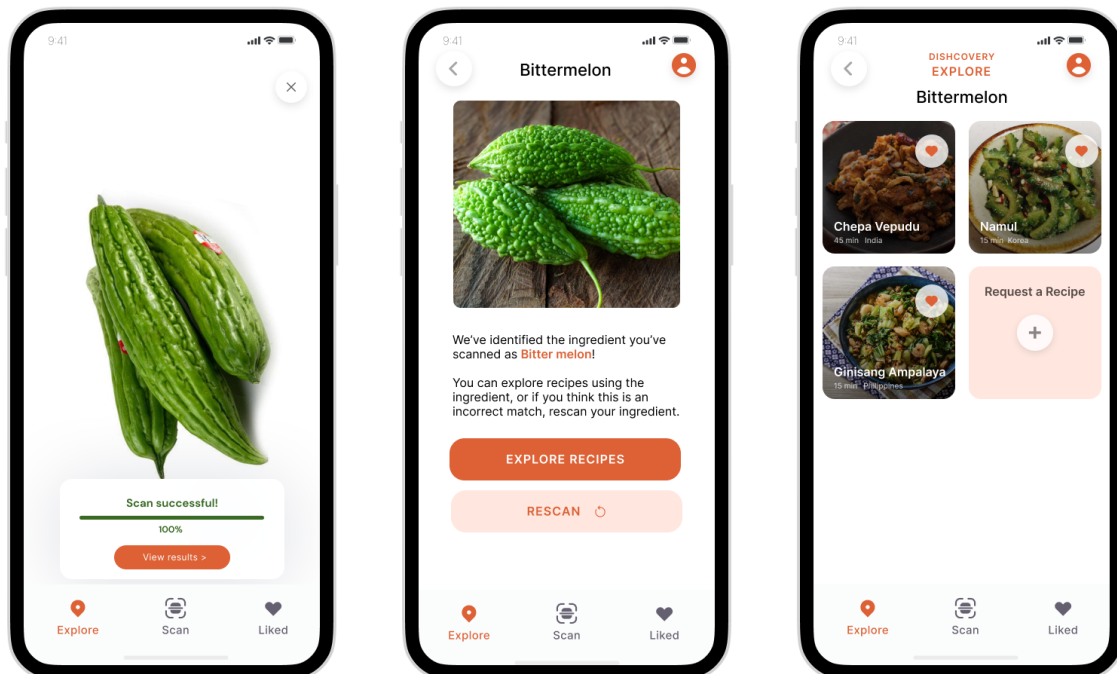
Solution Overview

Dishcovery's aim is to become the user's cultural culinary companion and to bring them the joy of cooking authentic foods from other cultures. Melding a user-friendly interface with image recognition technology and lots of historical context around global cuisines, Dishcovery makes it easy to explore the world through the language of food

Tasks

To use Dishcovery, the user must complete a few main tasks, as well as some sub-tasks. They are presented in order of simplicity below.

Task 1: Find a recipe

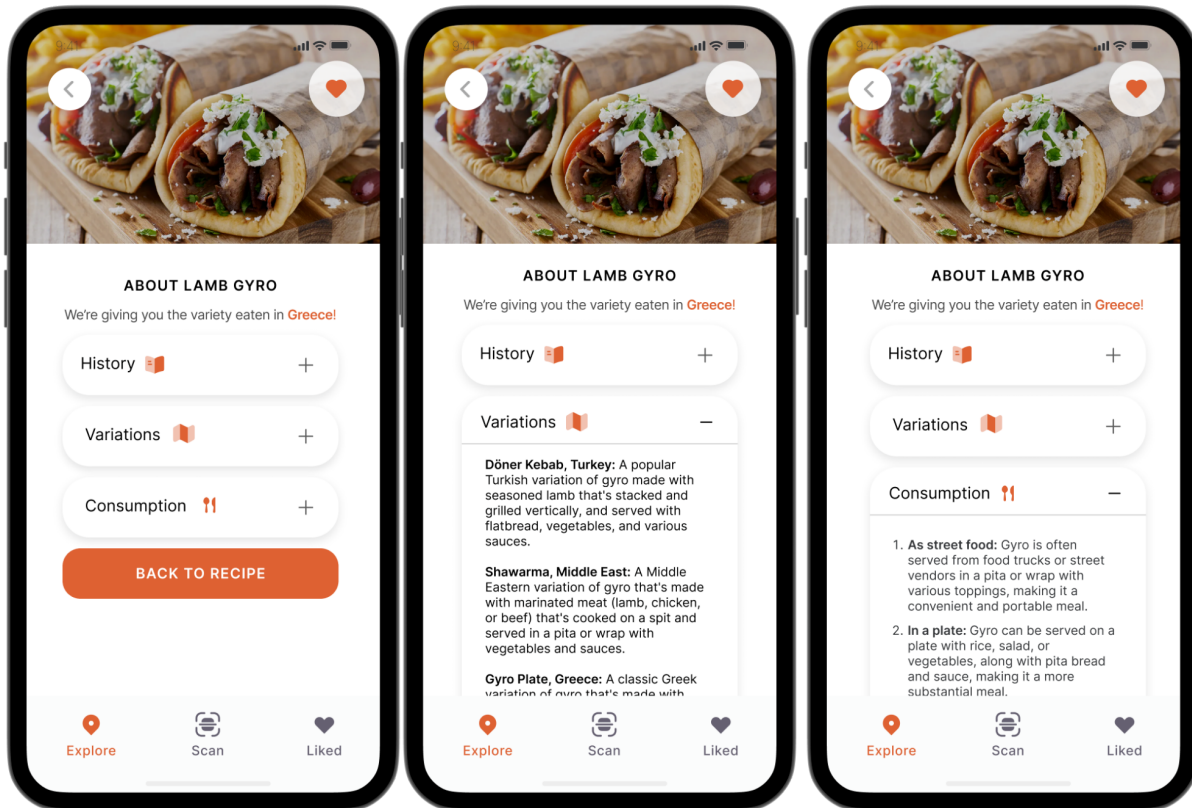


Finding a recipe may be done by **scanning an ingredient**, which will lead the user to authentic recipes that use it, or the user may choose to do this through the Explore page. We chose this as our **simple** task as scanning an ingredient is a very engaging way for users to access new recipes. Be it at the supermarket or in their own kitchen, users will be exposed to novel use cases of ingredients they already have access to.

The alternative flow is to **go on the Explore page** to find a recipe, as scanning an ingredient is not the only way a user can get to the second task. The Explore page offers

novelty for the user in a different way from the scan screen, recommending that a user try foods from cultural festivities at the time of year during which they use the app, or may even recommend recipes on the user's past scans.

Task 2: Learn about recipe



Once the user has found a recipe, they may read up on the historical and culinary context of the dish, which is our **moderate** task. This task may be done before, during, or after the complex task is completed. It is designed in a way that users can go back and forth between their recipe and the "About This Dish" screen. We chose this as an intermediate task to help the users become familiar with and get excited about the dishes they are able to cook, or as a way to pass the time while waiting for ingredients to chill, cook, thaw, or marinate.

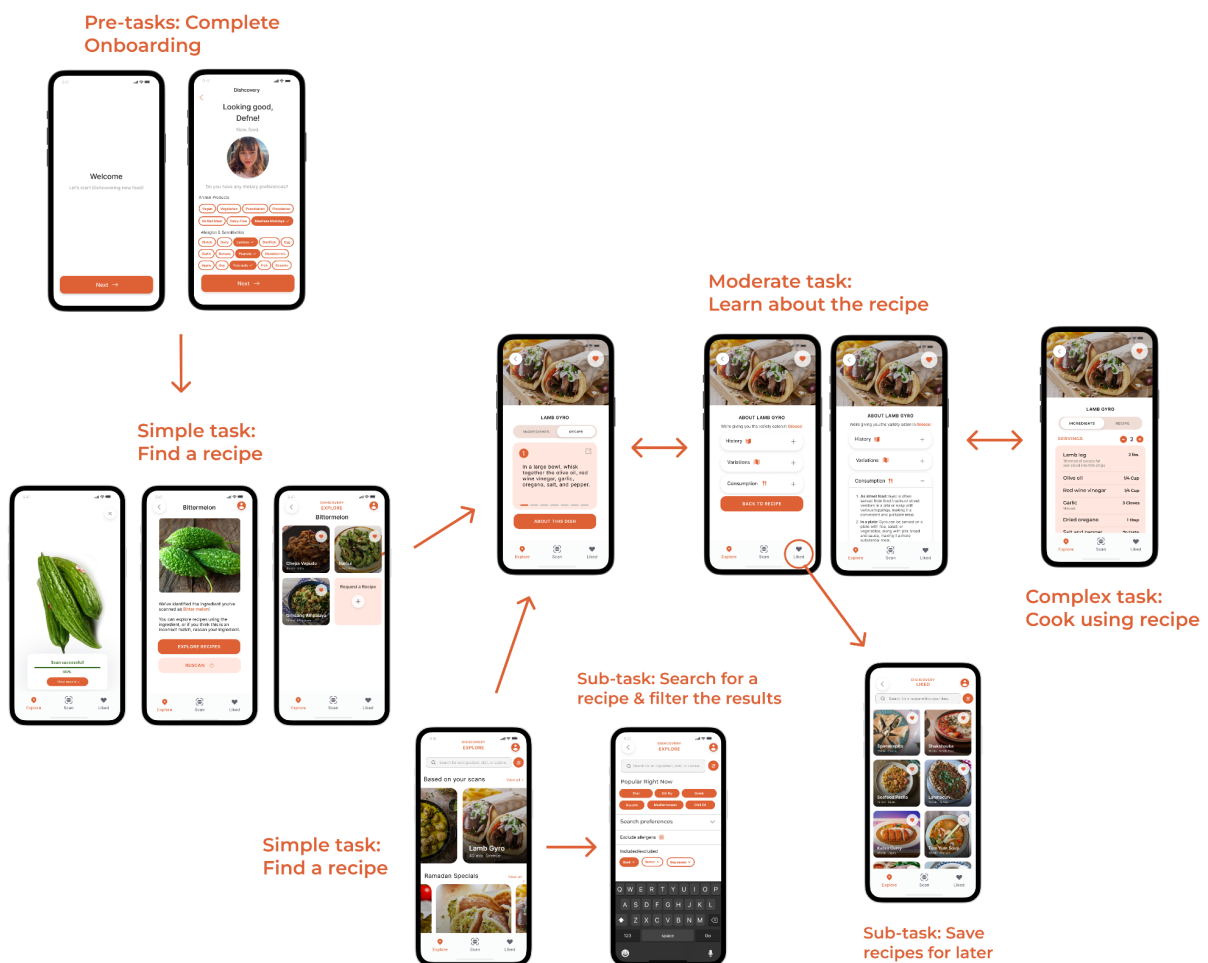
Task 3: Cook using a recipe

Our most complex and time-consuming task is cooking the recipe. A user can access the recipe screen of any dish by clicking on the cards of the Explore, Liked, or Ingredient Recipe pages.

Task Flows

Before the user begins any of our three tasks, they complete the onboarding if it is their first time using the app. Here, a user can input their dietary restrictions and preferences, indicate their cooking experience, and select cuisines of interest to start with.

Then, they may scan an ingredient to find recipes that use it or use the Explore page. As a sub-task for finding a recipe, they may use the search bar and search for an ingredient, recipe, or cuisine.



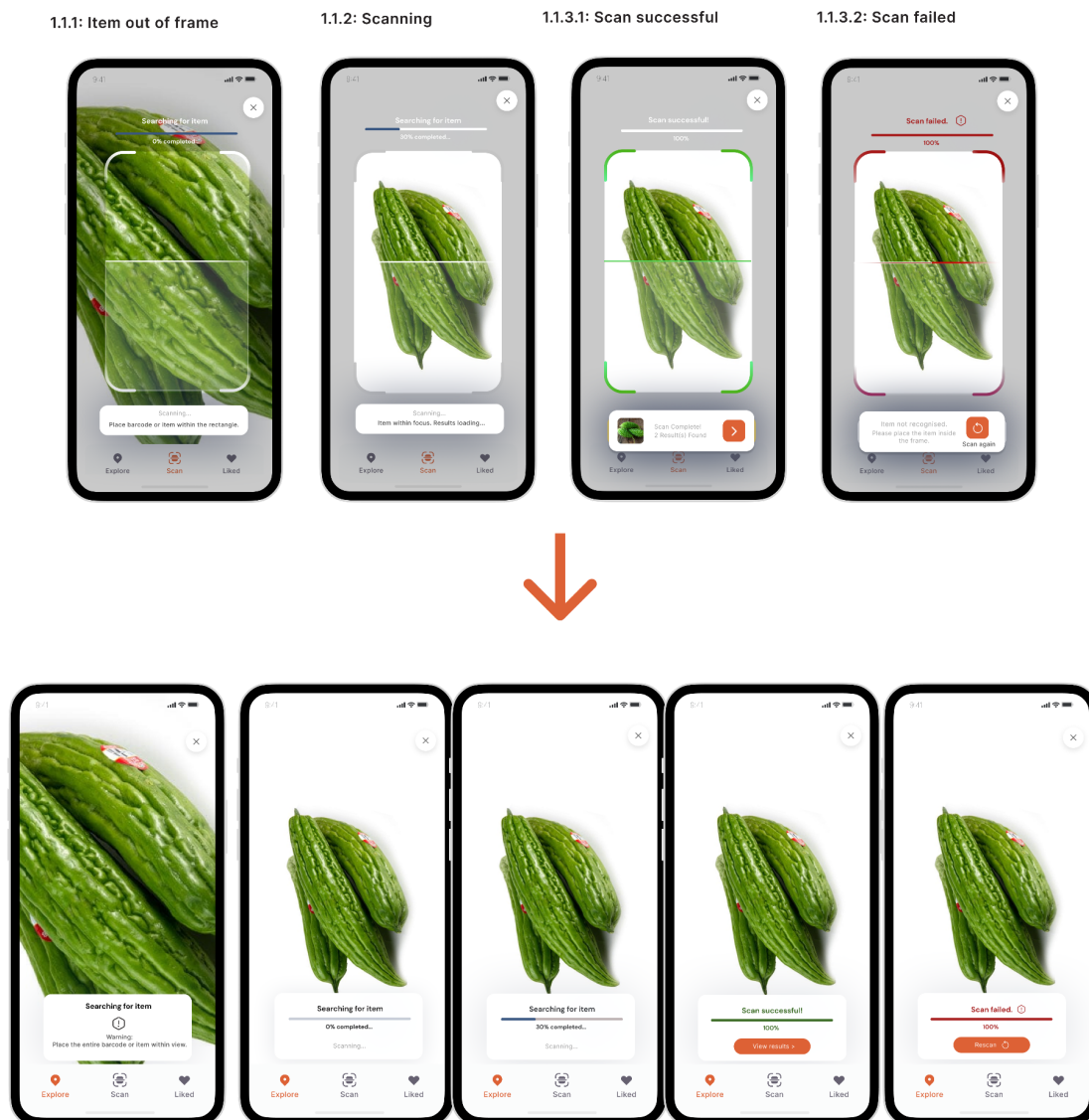
If the user is feeling hungry, they may start cooking a dish they find right away and read up on the history, variations, and consumption of the dish as they go. They may also choose to execute the moderate task of reading up on the dish first, then go on to cook the dish.

Additionally, a user may save recipes they like and access them on the “Liked” page if they wish to save a recipe for later.

Design Evolution

A few main screens and processes went through changes during Dishcovery’s last few design iterations.

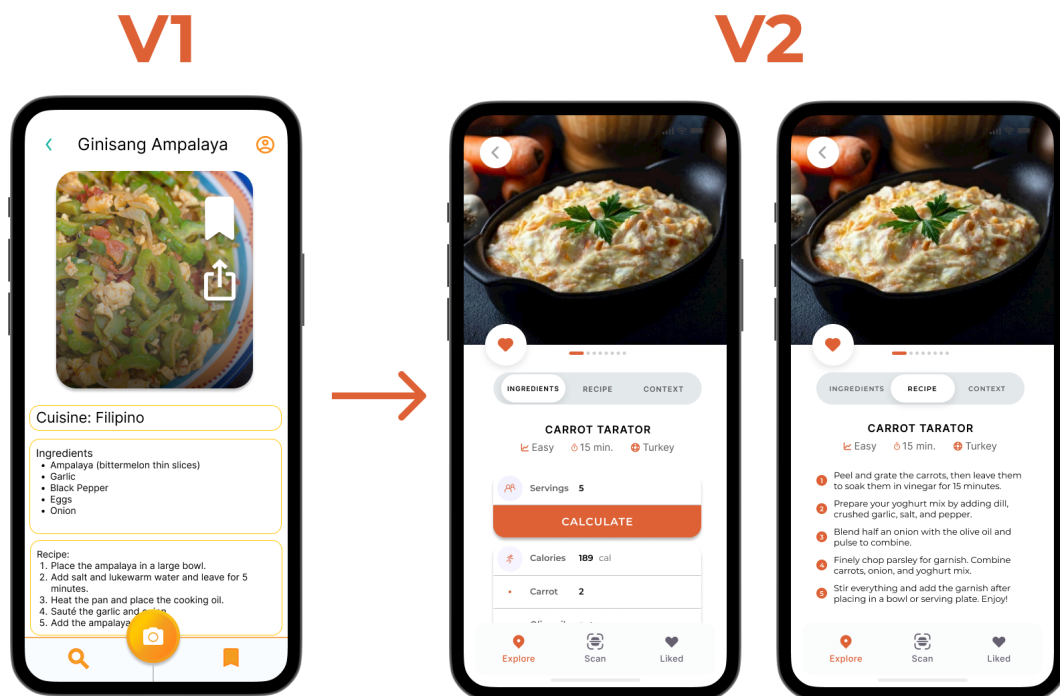
Scan screens



To update our scan screens, we centralised the information into one section at the bottom of the screen for easy access where users can see scan progress and status. We removed the rectangular box from the older version, since the box had no functionality in aiding our image recognition API.

Recipe page

Below, we have the first design we had for our recipe page, as well as our second version. In the second iteration, we introduced a toggle to switch between recipes as well as a “context” tab and a new colour scheme for the app.

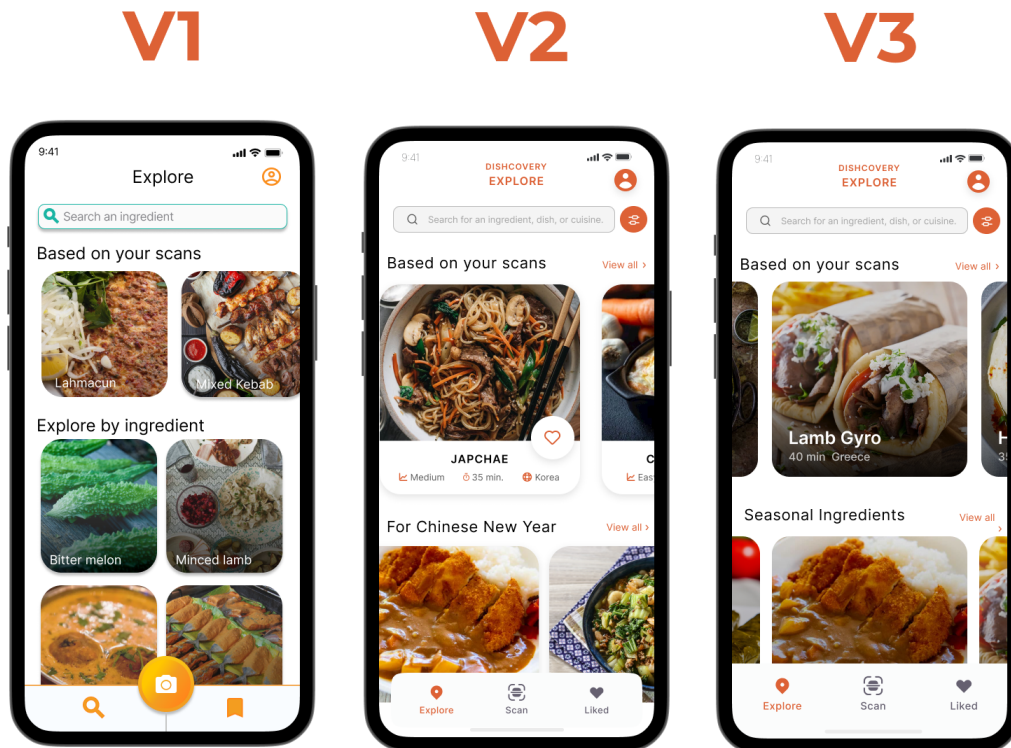


In the final iteration, we introduced a story-style recipe card which the user can click to go back and forth between instructions. This was derived from some user feedback we had about recipes in general, saying that it was hard for them to navigate through the instructions while also cooking.

Users also told us that the encircled numbers in the V2 were hard to see and made the recipe difficult to read, which is also why we opted for making them larger and the instructions more discreet. We additionally removed the Context tab to make it easier to switch between instructions and ingredients, and introduced an orange “About This Dish” button instead.

Explore page

The oldest version of our explore page, like all of our V1 screens, had a different colour scheme and a less clean UI. Over time, we updated the design of our Dishcards (cards that users can click to access the recipes) to allow for a smoother way to explore recipes.

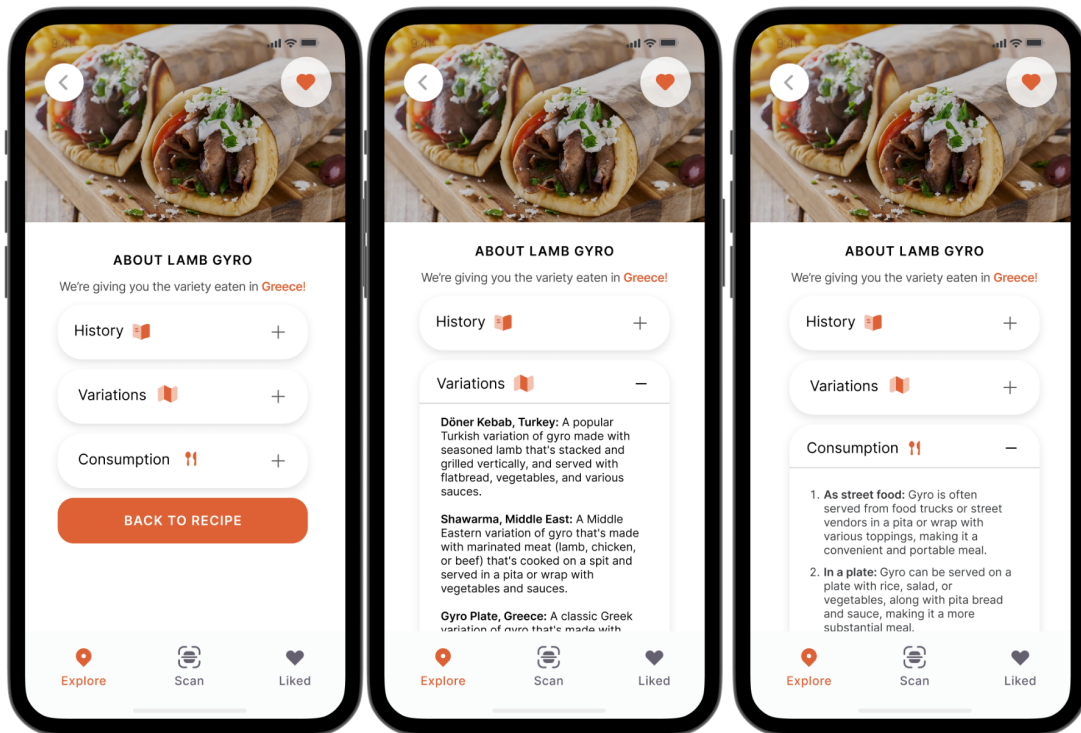


In our final interaction, we introduced a gradient overlay to contrast with the text showing information about the dish. We made the image bigger and the information easier to see by making the text larger.

New: About this dish

For the "About This Dish" section, we added tabs for users to freely navigate between different aspects of the dish such as its history, its variation, and its consumption.

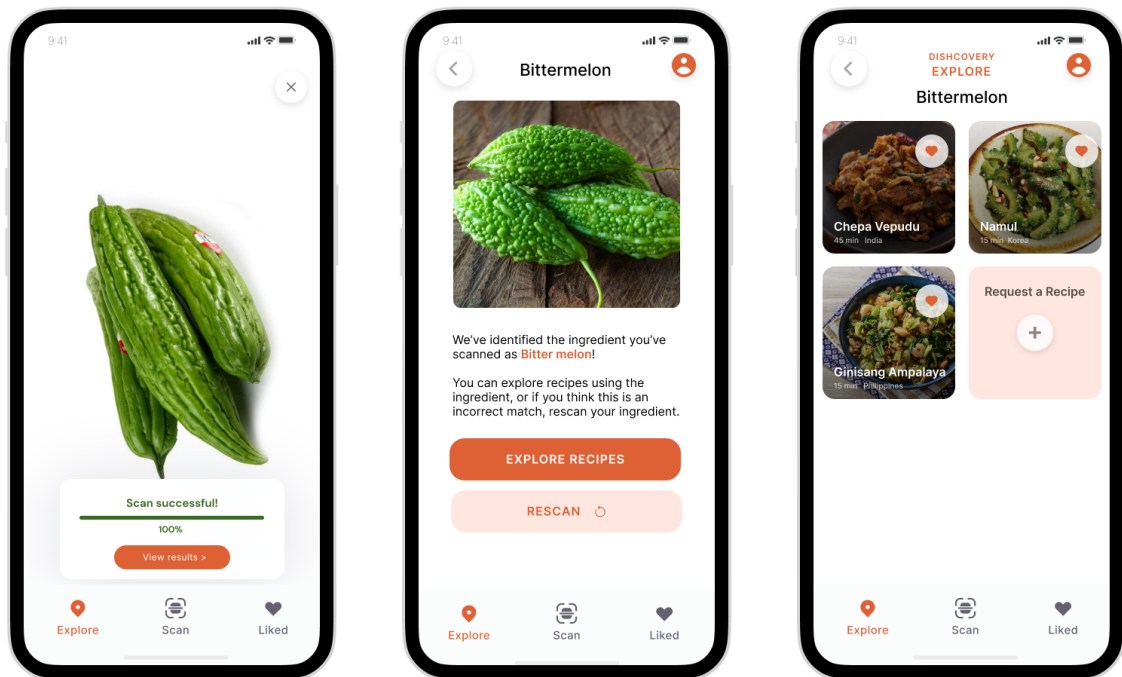
Focus on recipes, not ingredients



In the original version of Dishcovery, we provided additional context on *ingredients* and not dishes. During our user testing, we found that potential users were more excited about scanning everyday ingredients that they already owned over exotic or potentially intimidating ingredients. We therefore decided to provide context on the recipes instead and to allow the ingredients to direct users to authentic recipes.

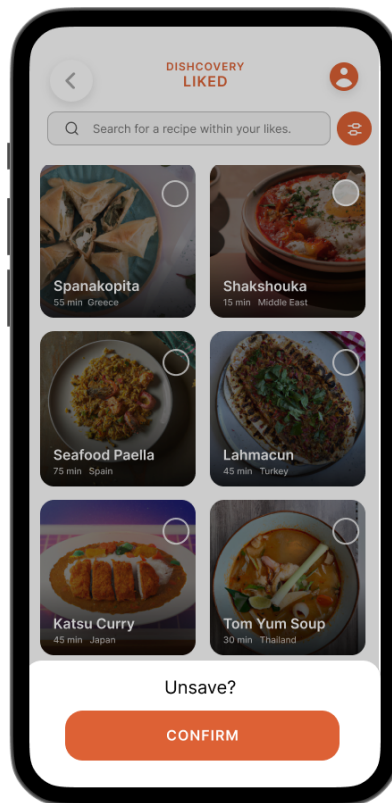
New: Scan results

As mentioned before, our scan results would usually lead to more information about the ingredient that the user had scanned. Since we introduced the “About This Dish” to replace this feature, we created a new intermediate screen between scanning an ingredient and viewing the recipes associated with it, allowing the user to re-scan if they think the API made an error.

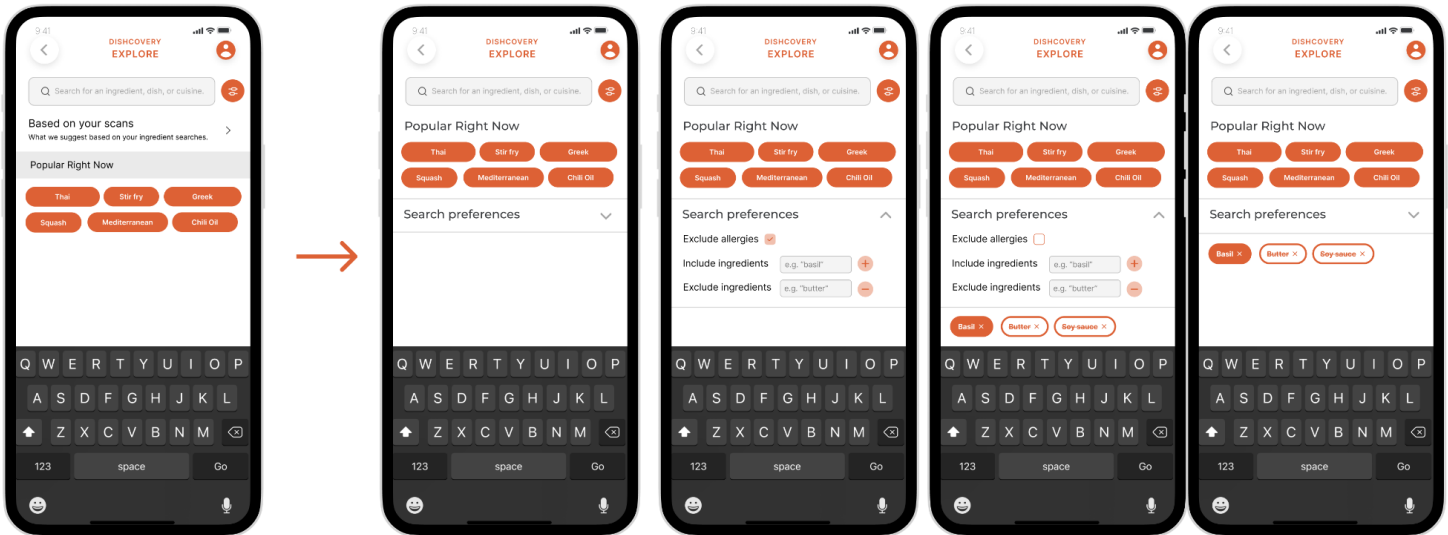


New: Multi-select unsave

After a heuristic evaluation of our previous interface last quarter, we had gotten the feedback that users needed a confirmation before un-saving the recipe, which we added at the time. However, we saw that it may be tedious for users to un-select and confirm a recipe for multiple recipes, so we added a multi-select unsave option to give the user more control.



New: Filtered search



Before

After

As a final UI update, we designed a more comprehensive search system which allows the user to filter by ingredients they do or do not want as well as allergens. This is distinct from our filters (accessed from top-right button) which can be applied before or after a search.

Final User Interface

Tools

We built our prototype using React Native, Expo, Firebase, and ClarifAI. Although all members of our team utilized iOS devices for testing, React Native still enabled flexible cross-platform implementation.



Most of our design elements were coded from scratch based off of our project Figma, some React libraries were used for icons and the like to have a consistency throughout the app. The most difficult technologies utilized for this project were Firebase and the ClarifAI frameworks. There was a bit of a learning curve getting acclimated with Firebase but with some YouTube tutorials, it became easier to troubleshoot where our errors were coming from and how to fix them.

More difficult was the integration of the ClarifAI API into our interface. One of the biggest challenges was testing with the limitation that the free version of the API only allowed for 1000 scans before we would need a new API key. In the beginning, this proved very frustrating and limiting for our team as we couldn't figure out why the scanning functionality was no longer working. After some investigation we located the problem and began periodically updating the API key.

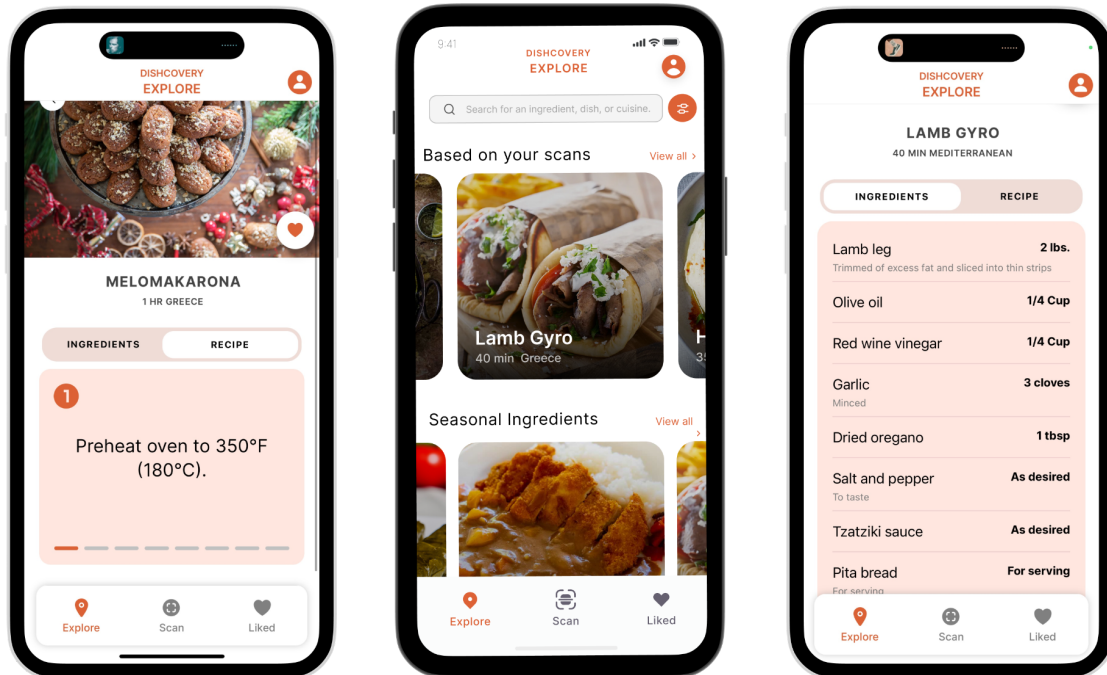
Additional tools used include Figma and GitHub. Figma was key for the constant iterations we made on our overall brand design and made the process of collaboration seamless. GitHub enabled us to be effective and efficient in peer-programming as both the version control functionality and the ability to connect with VSCode for live-share coding let us all develop at the same time without the constant hassle of pulling, pushing, syncing and repeat.

Front-end changes

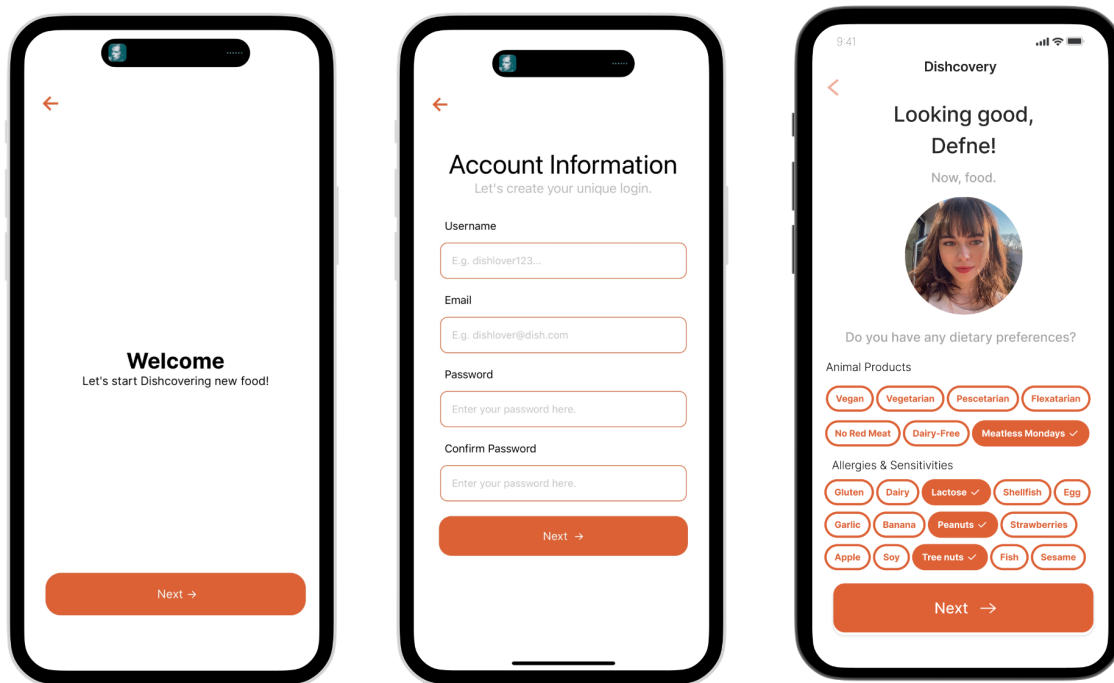
In the final UI design, users can scan an ingredient, find recipes using that ingredient, learn about a recipe's cultural context as well as other key facts, and save recipes to their liked dishes as pictured above.

To scan an item, users hit the center button in the navigation bar and the image recognition API analyzes the ingredient to fetch all relevant recipes utilizing that item. Recipes can also be accessed from the explore page and their "likes" if already used.

Our final screens on our React Native are much closer to our new Figma and provide a more user friendly experience. We have our story-style recipe cards, our new toggle and ingredient card design, as well as our new Dishcard with the gradient overlay on the app.



We also implemented the front-end and back-end for our onboarding flow, allowing users to sign up, upload a profile picture, and select some dietary preferences.



To be implemented

Aspects left unimplemented include:

- A functional search bar that can filter through the recipes stored in the Firestore database by ingredient, cuisine, and region.
- Some of our new screen designs: multi-select unliking feature, scan results, the complete filtered search UI, the About This Dish page, and the new scan screens.
- The ability to share recipes with others both in-app and through external platforms.
- An AI-based recommendation engine that serves users potential recipes or ingredients to try based on their past interactions with the application.

On the internal side of the app, we would like to work on a better model for sourcing recipes as well as actually getting them into our database. Currently, we have used a Google Form sourcing cultural recipes from friends and family and then manually adding each to our database. It would be nice to automate this process to free up the manpower it takes for these tasks to better allocate these resources to finishing the other aspects we wish to add to the app.

Hard-coded & Wizard-of-Oz

As it stands, the only hard-coded data in our app is located in the search results. Despite what is typed into the search bar, the results will always pull up recipes using Bitter

Melon. We pre-populated these results in our Firebase database in order to showcase the intended functionality. Moreover, on the profile page, we have hard-coded the values associated with a user's dietary preferences to mimic what would be displayed if we had this actually working. When launching we want both these features to be fully implemented, displaying data actually requesting and marked by the user.

To try out our app:

1. Download Expo Go
2. Scan the QR code found on our README
3. Start using Dishcovery!

Making It Real

The team

As a team, we come from diverse backgrounds as designers and developers studying Human-Computer Interaction.

Defne Genç, our designer and front-end developer, is a Symbolic Systems major who has been with this project since its conception. She acquired her design skills in the making of Dishcovery in CS 147, meaning that she evolved as a designer through the design iterations of this app. She is also an avid cook and owns a cooking Instagram account, @chefnegenc, where she shares food she cooks from Turkey, her home country.

Sharon Wambu, one of our back-end and front end developers, is a Computer Science major who joined this project during the CS 194H. She advanced her development skills during the iterations of this app and through her first React native app, RecoveryGrow, which was developed during CS 147. She enjoys trying new dishes and cooking Kenyan food with her family.

Business model

Our current proposed business model is to generate revenue both on the user and enterprise sides. For users, we'd like to propose supermarket delivery apps as a means of buying ingredients they want for their recipes but don't have on hand, taking a cut from the transaction.

On the enterprise side, we could offer supermarkets like Safeway a Dishcovery API to allow users to scan the items they sell and access culturally authentic recipes to use them in. We could also thus offer insight into how many times which ingredients are scanned

(without compromising any user data) to provide valuable data on how their products are perceived by customers.

The customer

For revenue, we have two main kinds of customers

- Enterprise: supermarkets
- Consumer: users who cook with / buy ingredients.

However, there will be a large user base who uses Dishcovery for free and benefits from the range of authentic recipes it provides. This user base will hopefully help Dishcovery propel its name and ensure its reputation.

Unit economics

Depending on how we sell to supermarkets, we can offer the API on a yearly basis per user who downloads their app. From some quick research, we see that POS (point-of-sale) software alone starts at \$250 to \$500 per lane/user at supermarkets. Thus, it would make sense to charge yearly an amount equivalent to \$50 per user who downloads their app, considering we'd be 1) encouraging users to download their app because of this fun new feature, 2) be providing valuable data on what users scan, how often, and when, and 3) encourage customers to buy an ingredient if they find a recipe they're excited about using it with.

For the supermarket delivery aspect, we'd take the standard cut that other services take for referring the customer to their app, about 5%.

Market Opportunity

The retail POS system is projected to be valued at USD 34.4 billion over the next five years. We think it's reasonable to assume that 40% belongs to supermarkets, and that Dishcovery could obtain \$688M of that market.

Additionally, supermarket delivery is currently a \$36B market, and assuming we capture 0.5% of the market, we'd have an additional \$180M in our Serviceable Obtainable Market.

Long-term impact

In the long-term, Dishcovery's aim is to make everyone aware of the fun and novelty associated with cultural cooking. Scanning ingredients at a supermarket to see what new dishes one can cook with it will become commonplace and benefit both consumers and the ones selling to them.

It will also make us less intimidated by other cultures' dishes and even excited to cook with them. We hope that each and every user of Dishcovery learns about the history behind new dishes every day, and is one step closer to becoming a global culinary citizen.

Summary

Through Dishcovery, we created a platform for lowering the barrier of entry for cooking culturally authentic meals. Unlike existing solutions, we remove the burden from users on figuring out creative and authentic ways of using an ingredient they find in their pantry or in the supermarket. It is often that we cook what is familiar not for lack of wanting to try new things, but to stray away from ruining a meal and not push our cooking skills to new limits. Instead, we urge users to try something new and learn something on the journey. Our key impact is helping people explore different cultures through cuisine while remaining accessible to all.

1. Making it real (~1 page)
 - Team: who are you and why are you qualified to do this?
 - What is the business model to make this viable?
 - What are the unit economics/pricing?
 - Who is the customer?
 - How big is the market opportunity?
 - What will be the long-term impact of your product?
2. Summary (1 paragraph)
 - What is your key innovation?
 - What will your key impact on the world be?