



Dishcovery

Lo-Fi Prototype

Culture through Cuisine

Defne Genç, Janet Zhong,
Amrita Palaparthi, Kyla Guru



Our PotLuck



Defne



Kyla



Janet



Amrita

Potluck
item:



Potluck
item:



Potluck
item:

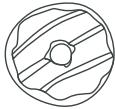


Potluck
item:



Problem

Learning about and creating food
with ingredients from other cultures
can be an intimidating experience.



Task 1: Identification

Description: I want to automatically identify an unfamiliar food item

Category: Simple



Task 2: Contextualization

Description: I want to learn more about the cultural context behind a food item and its uses in recipes

Category: Moderate



Task 3: Authentic Cooking

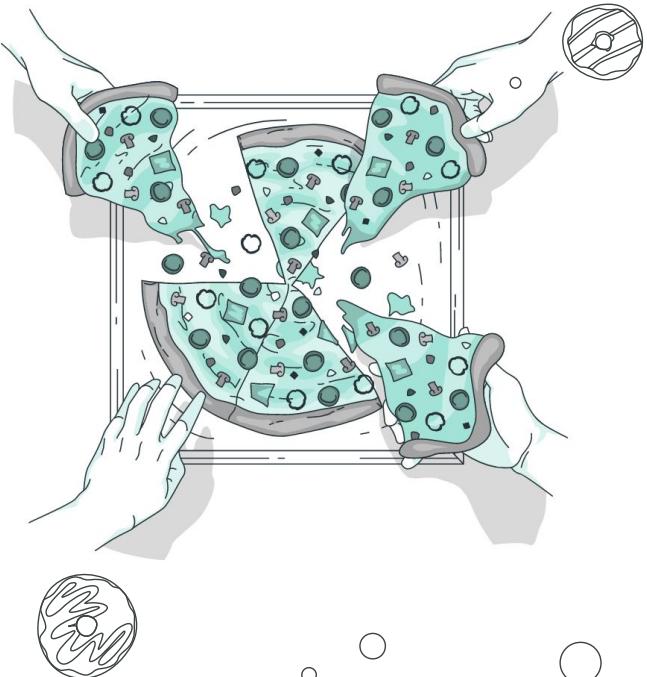
Description: I want to cook a cultural authentic dish with a new ingredient

Category: Moderate/ Hard



Bonus tasks

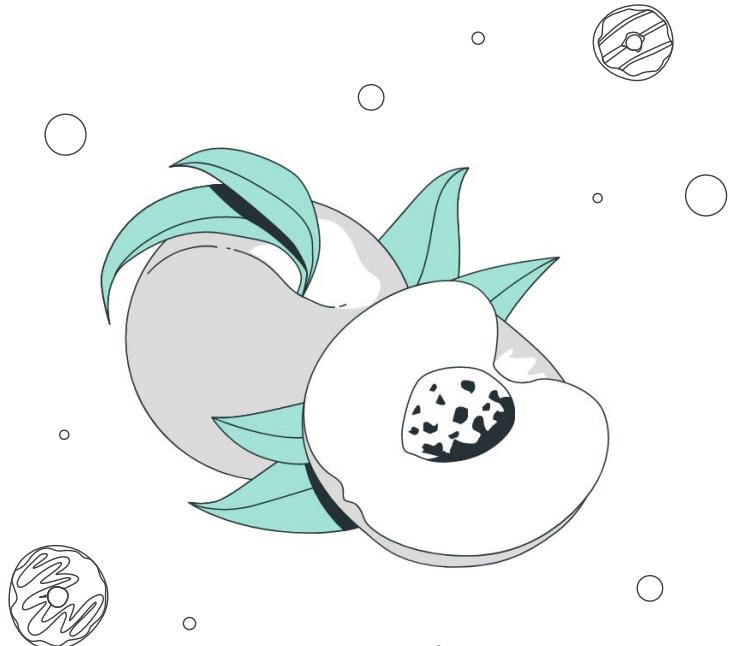
- **Sharing with friends** - cooking or eating together or sharing recipes with friends
- **Habit planning** - making exploring cultural dishes into a long term habit rather than a one-off thing



Our Solution

Dishcovery helps you recognize, learn about, and cook with foods from around the world. We use image recognition to identify new ingredients and enable you to delve into their cultural context and authentic recipes using them, providing a **cultural culinary companion** from the grocery store to your kitchen.

Table of Contents



Sketching Exploration

Concept sketches and our reasoning in narrowing in on one realization



Interface Design

Elements in our selected interface and our rationale



Lo-Fi Prototyping

Task flows we ideated and the transition from drawings to lo-fi testing environment



Testing & Summary

Methodology of testing and observations from our data



Exploring Sketches of Solutions

Initial Concept Sketches



Our Favorites

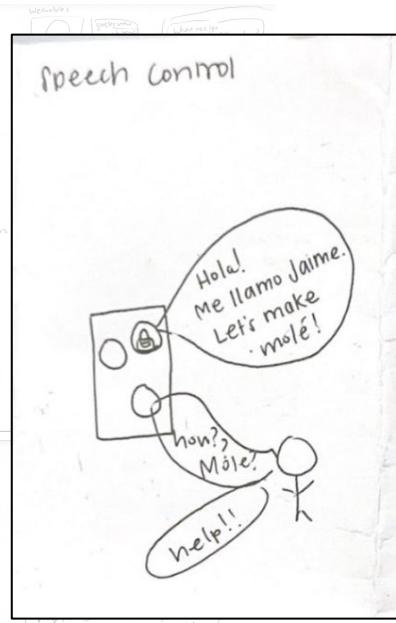
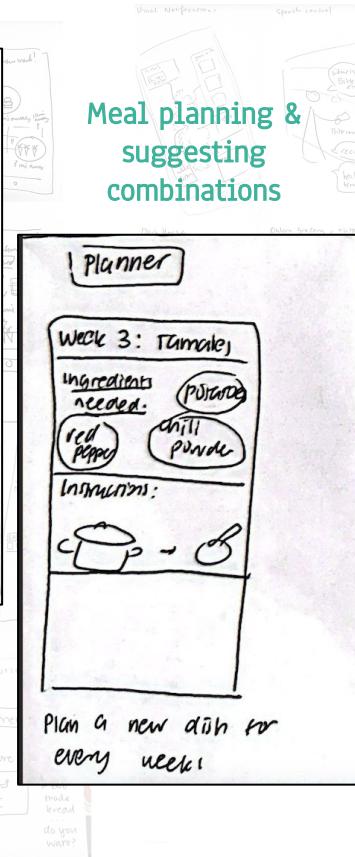
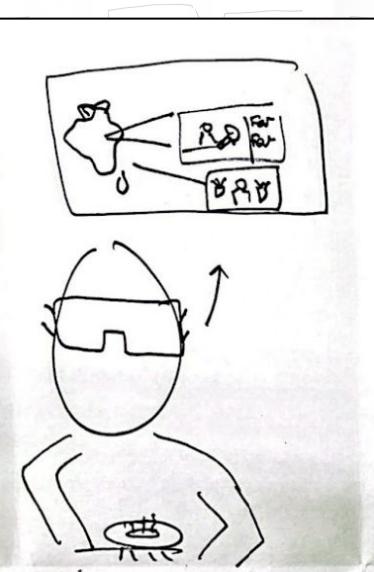
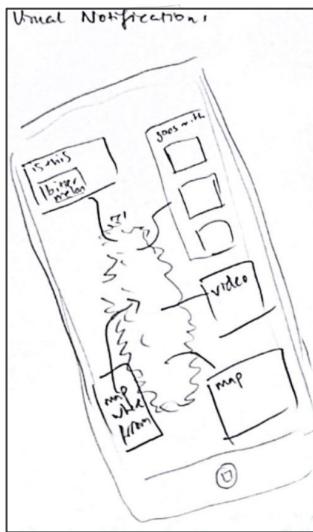


Image recognition with cultural context



2016

Voice memos to add personal touch



Final Two Selections

Augmented Reality

pantry planner and cooking companion

- Scan pantry and see enticing final cooked dishes rotating
- Habit tracker and pantry planner
- Suggested ingredients and recipes based on your pantry
- Voice notes from chefs while cooking

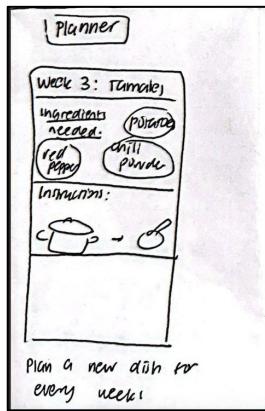
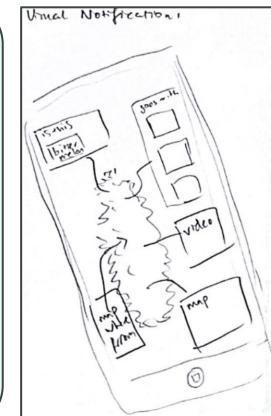


Image Recognition

grocery shopping companion

- Scan unfamiliar ingredients and find out cultural context, historical facts, nutritional information, personal stories involving ingredient
- Suggested cultural recipes
- Provide steps, information, and sharing for cultural recipes



Augmented Reality for Pantry Planning

Pros

- Work with what you have, **integrates into your lifestyle (habit)**
- **Makes it easier to shop**
- More incentive to buy cultural ingredients that go well with existing ingredients you already own
- AI recommendation software can be added to understand recipes they haven't cooked before and what they've enjoyed in the past
- **Potential to integrate with image recognition:** showing what the final product food could look like?
- Helps people **visualize final dish/ cooking** while they are in the mode about to cook

Cons

- People may be too lazy to **input everything** in their pantry
- Does not really target the **non-food motivated audience**
- Who do we source recipes from? How do we decide which recipes to recommend?
- **Additional, expensive hardware** for AR
- Not accessible to **visually impaired users**
- If they are already in the pantry, **will they have a lot of incentive to go out and buy new ingredients?**

Final Selection: Image Recognition

Pros

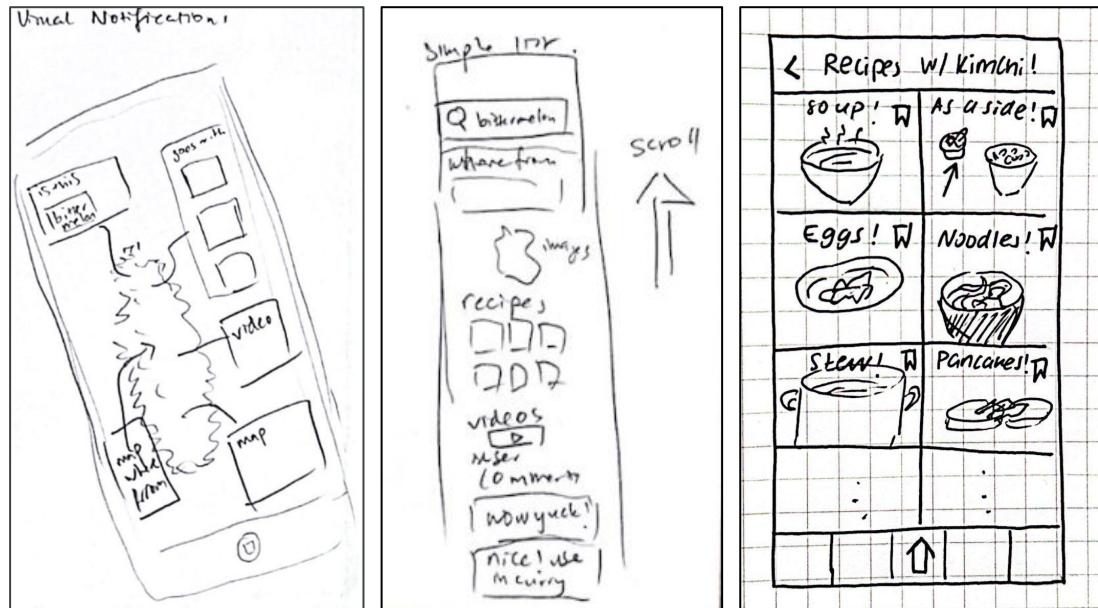
- Real-time, fits into the cultural companion narrative as an app that is with you while you shop
- **Very clear relation to our needfinding interview with 99 Ranch**
- **Variety of information is easily available to add** as part of the visual experience of scanning an ingredient
- Users can **already have experience** with using image recognition/scanning through their camera for things like QR codes
- Requires **no additional hardware**, only a phone with an integrated camera

Cons

- **Risk of inaccuracy**
- **Curating the information** that populates about a certain ingredient may be difficult and require an understanding of accurate data sources to find this information
- **Inaccessible** for those that cannot hold their phone up for a longer period of time to capture the photo
- Visual focus might not be as accessible for **visually impaired users**
- People who are shopping for groceries in-person **may be in a rush** and won't want to explore too much

Why Image Recognition?

- Vision repeated over all of our product sketches
- Need for **ingredient detection and simplifying the recipe** were reflected through need-finding (e.g. manager of 99 Ranch)
- Incentives are limited for user data-entry for pantry idea

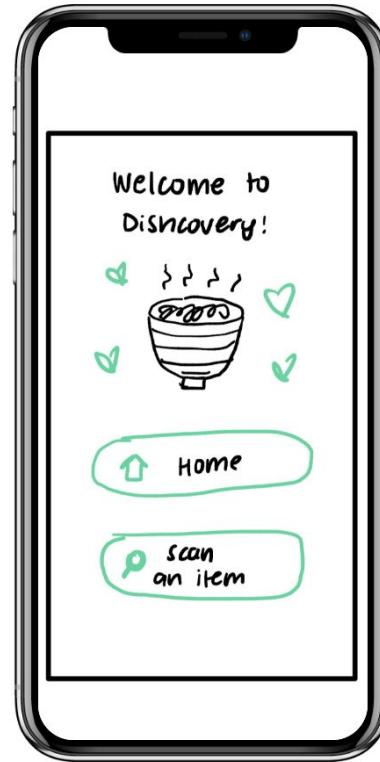


Lo-Fi Prototyping from Sketches

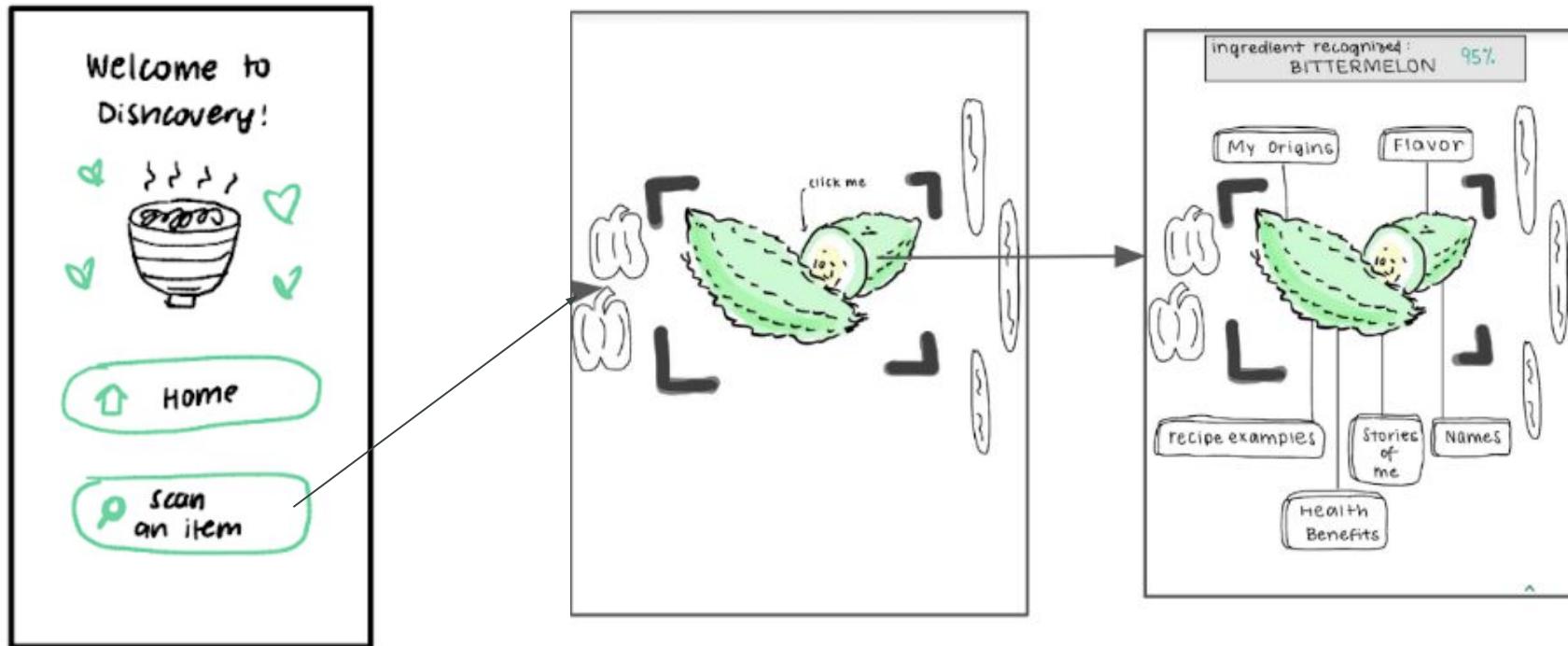
Key Features and Interactions

- Image recognition feature
- Nice UI for cultural context (different ideas of interaction include: QR code-like hovering text boxes, scrolling curated content, tik-tok like videos of context/ recipes/ stories)
- Search recipes by culture

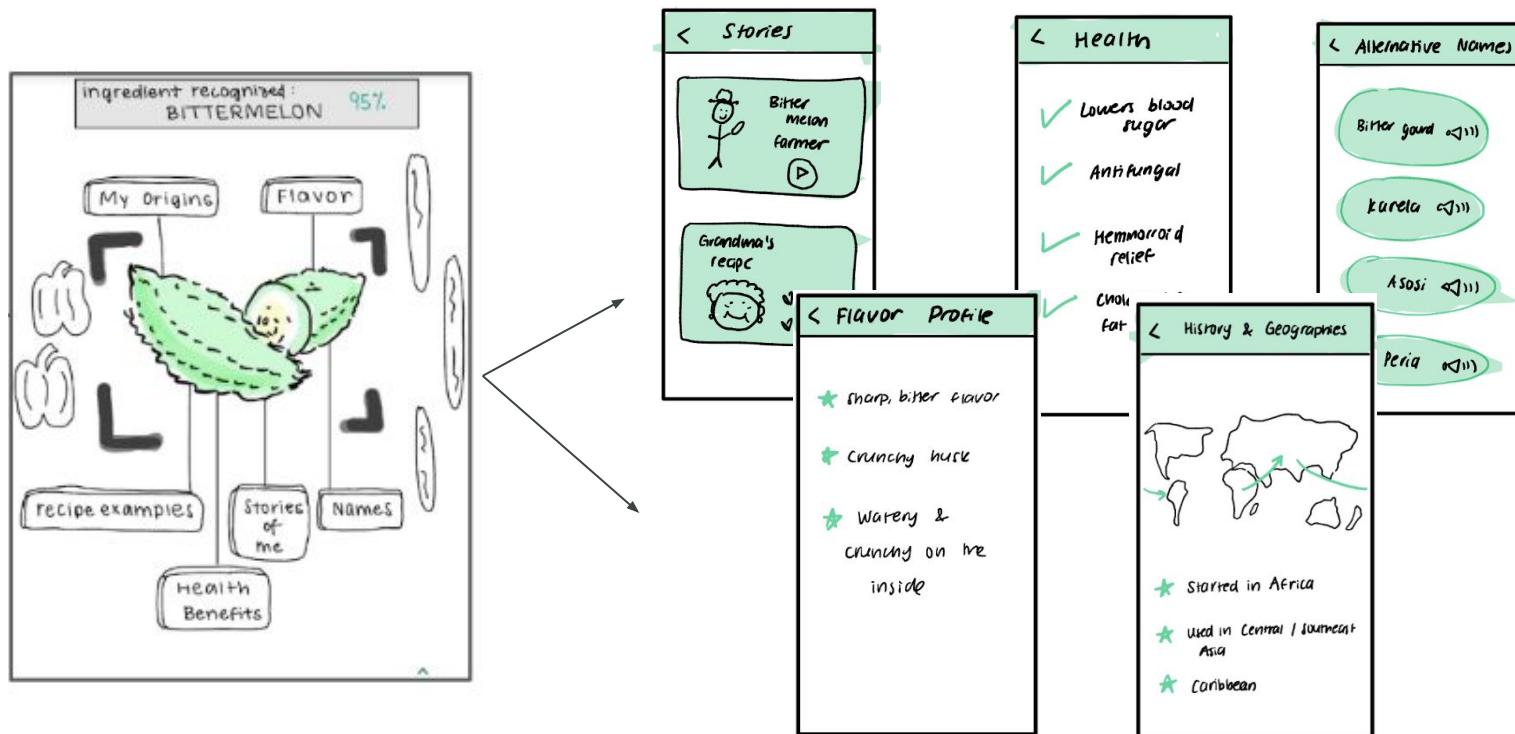
[**Link**](#) to lo-fi prototype on
Marvel prototyping app



Task Flow 1: Scanning & Identification



Task flow 2: Additional Context



Task flow 3 - Cooking with A Scanned Ingredient

Click on "recipes"

Recipes: Bitter Melon

Filter: Bitter Melon

Goya Champuru Origin: Japan	Ginisang Ampalaya Origin: Philippines
Canh Kho Qua Origin: Vietnam	Bitter Melon Beans Origin: Philippines
Kuropia Pekinensis Origin: China	Kakarakaya Vepudu Origin: India
Namul Origin: Korea	Kerala Fried Rice Origin: India

Filter to see a subset of recipes

Click on a selected recipe

Bitter Melon Namul

Cuisine: Korean

Cooking time: 10 min

Share!

Ingredients:

- Bitter melon
- Bean sprouts
- Grated garlic
- White sesame seeds

Directions:

- (1) cut bitter melon in half ---

Recipes: Bitter Melon

Meal Type:

- Breakfast
- Lunch
- Dinner
- Snacks + Sweets

Region of Origin:

- India
- Japan

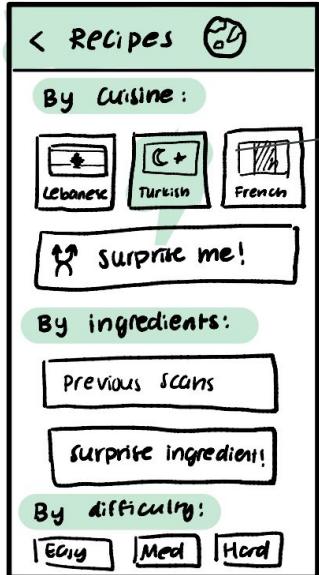
Cultural Context:

- Comfort Food
- Celebrations + Festival Meals

Range Difficulty:

- Easy
- Medium
- Hard

Task flow 3 - Cooking A Selected Recipe



Browse through recipes under "Recipes" and...

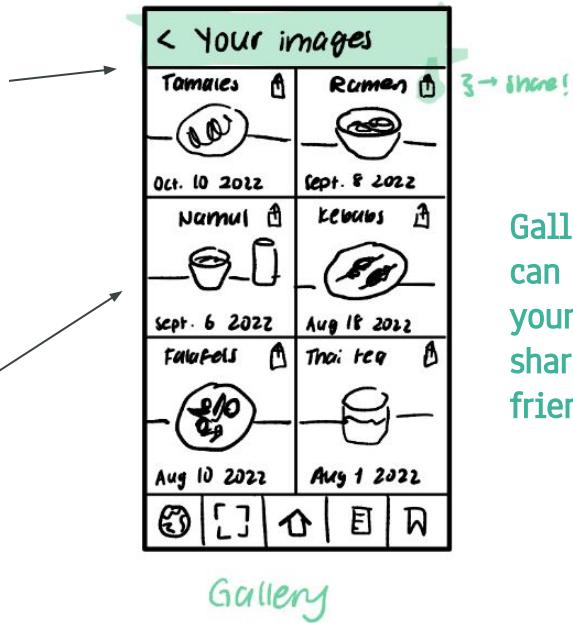
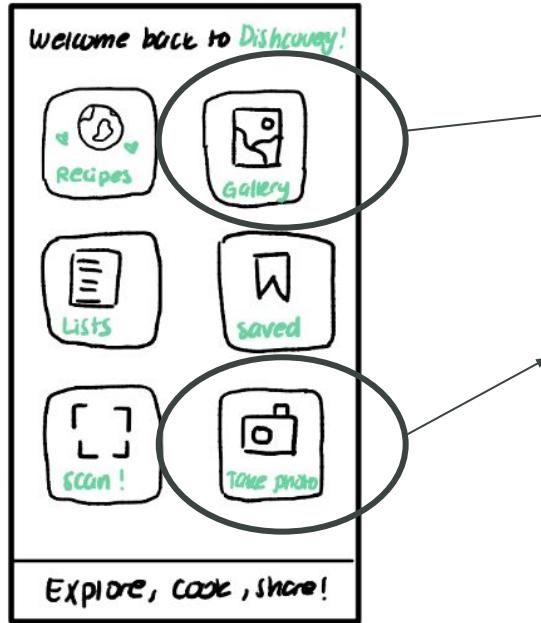
< Turkish Recipes C+	
Medium	Easy
Köfte	Bulgur
Hard	Easy
Dolma	Menemen
Medium	Hard
Kübastı	Mantı
Medium	Medium
Gözleme	Börek

Track your ingredient list & Dishlist under "Lists"!

< Lists	
Shopping list:	
sumak	<input type="checkbox"/>
Bitter melon	<input type="checkbox"/>
Lemongrass	<input type="checkbox"/>
Cumin	<input type="checkbox"/>
Dishlist:	
Bulgur	<input type="checkbox"/>
Namul	<input type="checkbox"/>
Menemen	<input type="checkbox"/>

(Home Screen)

Bonus task flow - sharing with friends/habit tracking



Gallery where you can keep track of your dishes and share finished with friends

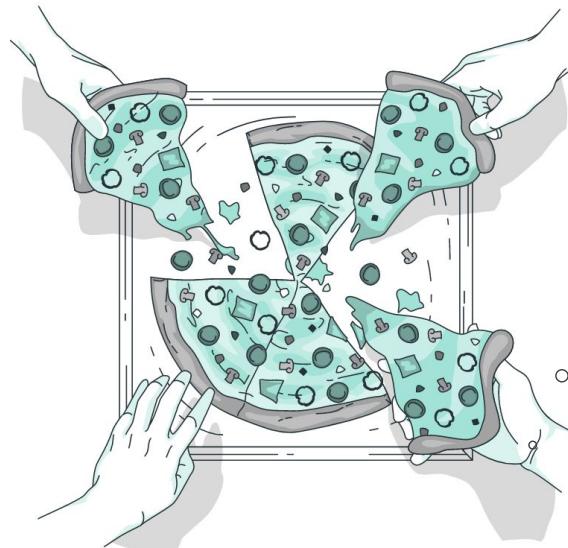
Testing

- Tested on four participants in Palo Alto

Our PotLuck-ers

Interviewees

- Locations: Salt n' Straw and Verve in Palo Alto, California
- Voice record + physical notes
- Age range: early professional - late career
- Non-Stanford Students!

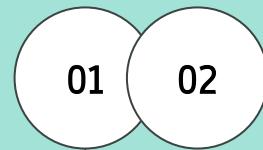


Perspectives

- Diverse backgrounds: immigrants from different countries
 - Variety of job roles
 - Variety of motivations behind cooking
 - Variety of cooking experience and interest levels
-

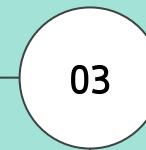
Meet Our PotLuck-ers

Medical Professionals



Nora and
Pamela

Social Science Researcher



Ahmed

Financial Analyst



Casey

Measurements for Usability Goals

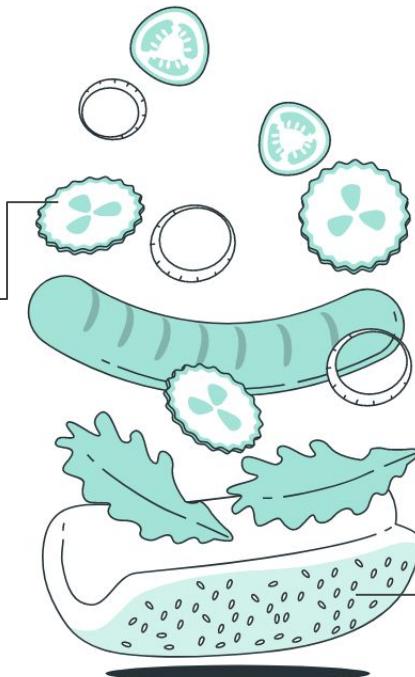
Effectiveness

How easy is the flow of the interface?

How do you think you would use this app?

Observations: What is the user clicking the most?

When do they get lost/confused?



Satisfaction

Would you be comfortable sending your a friend or partner to a foreign grocery equipped with this app?

What feature do you think you wouldn't use much? What do you want to see more of?

What was your favorite part of the app experience?

Participant 1 & 2: Nima and Priya

- Add in a preferences page for dietary information
- Confusion about **easy, medium, hard vs speed** (Noema is not super into cooking so wants quick dishes)
- Liked the **interactive scanner**
- Keep it raw, cute vs formal
- Add in Drinks/beverages
- **Nima would not look at alternate names but this was a key feature for Priya, who has an Italian husband**
- Scan me is particularly helpful —> **can navigate in a foreign grocery**
- Can include calories/nutrition information for recipes
- **UI - have the scan button highlighted** because that's the main part of the app



Medical Researchers (30s)

Participant 3 - Amar

- **Health benefits first, then flavor, origins less interesting**
- Heading back to Home Screen from a single recipe instead of the recipes page
- **Seems to overlap a lot —> lists, saved, and recipes**
- **Minimize friction** to get to actually cooking
Distinguish between utility and education
- Take a photo not super clear that it's of a dish
- **Lot of clutter in top 3 options**
- **Vegetarian, vegan, gluten free**, etc also important to include
- **Filter by health benefits** as a preference at the beginning
- Background: research scientist at fb



Social Science Researcher (40s)

Participant 4 - Cassey

- **Flavor first** —> want to filter by that
- Names is unclear, kind of auxiliary
- Liked the **save recipes** options
- Wants to save from a specific recipe
- **Timeframe** for recipes, number of ingredients
- More confusion about what “**take a photo**” meant
- Can tag a recipe to a photo
- **Make the scan bigger**
- Most important: scanning feature
- Can take photo and scan be merged?



Financial Analyst (20s)

Key Results

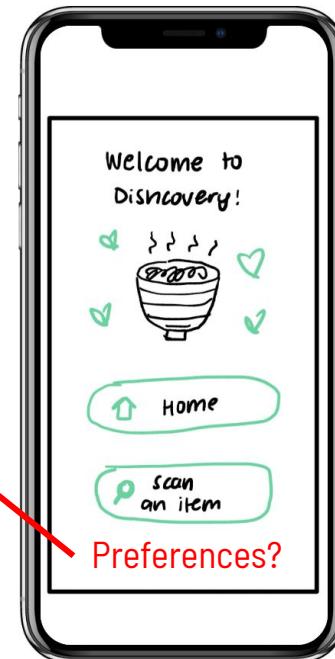
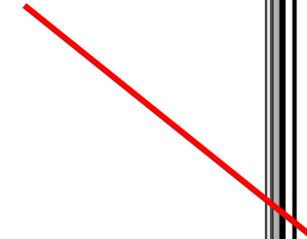
- Confusion between '**take a photo**' and '**scan**'.
 - Scanning should be made more prominent and bigger
- Confusion between **recipes tab on home page** and **recipes shown after scanning ingredients**
- Being able to set **food preferences/dietary profile**
- **Honing in on the features** people like when filtering recipes
 - Time required for preparation, flavour profile of dish, etc.
- In general, people liked the information from the scanning and the way it was presented
 - Users favored towards the **flavor profile, names***, **recipes** tabs
 - *Confusion on what '**names**' means
- Some tasks - like the sharing, saving photos etc not so clear

Limitations

- Will people actually use image recognition or would something like search be easier? If search is better this may affect our UI with the QR-code like hovering boxes
- How accessible is this for the visually impaired?
- Would people have time to look up additional information in the grocery store?

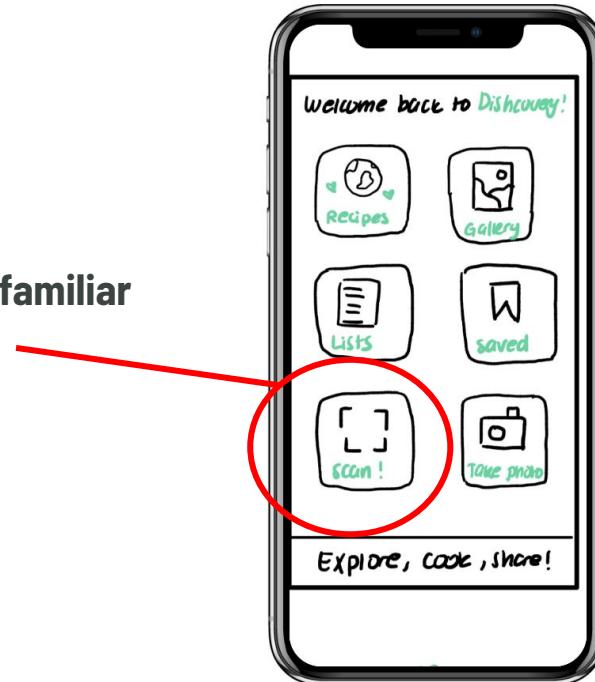
Next steps forward

- At the beginning, include a **set-up page where they can set their food allergies, dietary profiles and preferred flavour profiles** (spice level etc.) **preferred health benefits** and automatically filter recipes or give a matching score based off of this



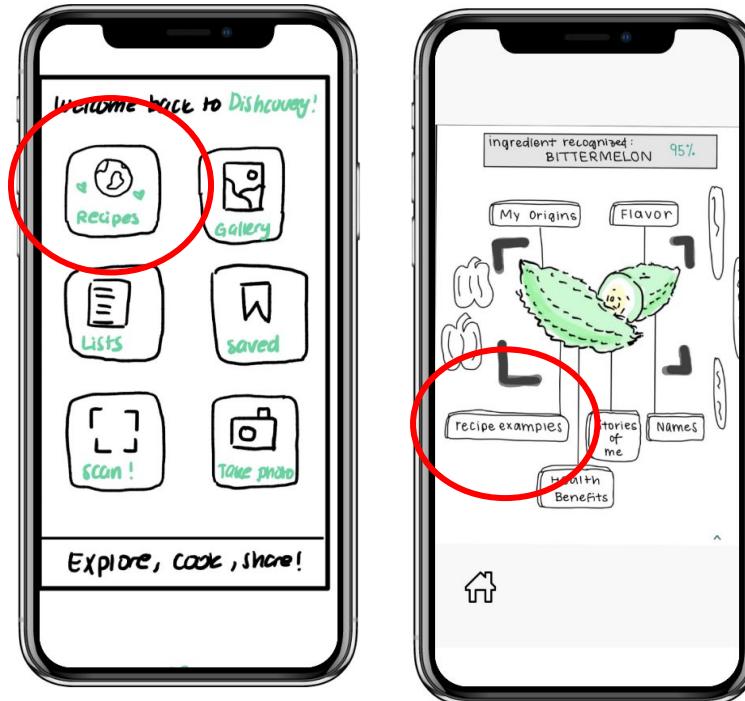
Next steps forward

- In the home page, make the **scanning of the unfamiliar ingredients much bigger** and the **main button**



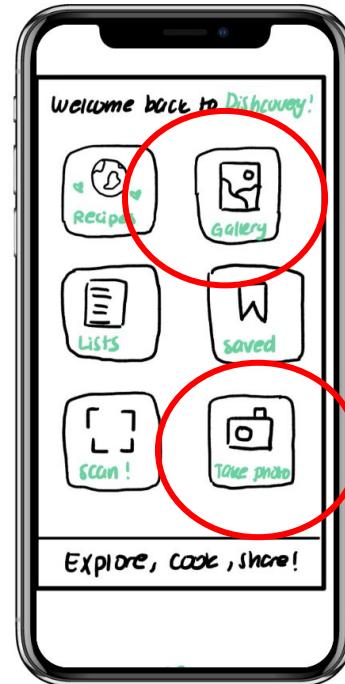
Next steps forward

- Some clarity between the **recipe button** in home page and recipe button after scanning ingredient



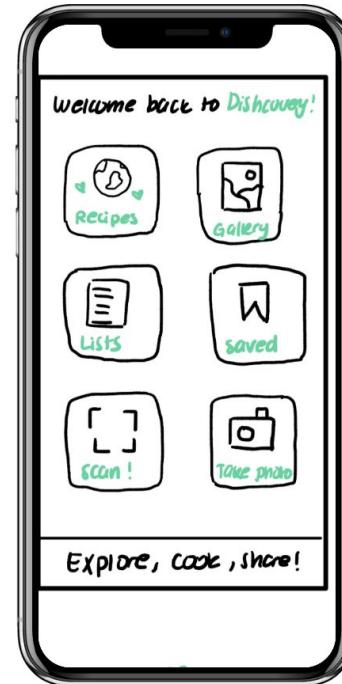
Next steps forward

- Make it clear that these **take a photo and gallery tools** are for finished dishes, not scanning ingredients, if we choose to keep it



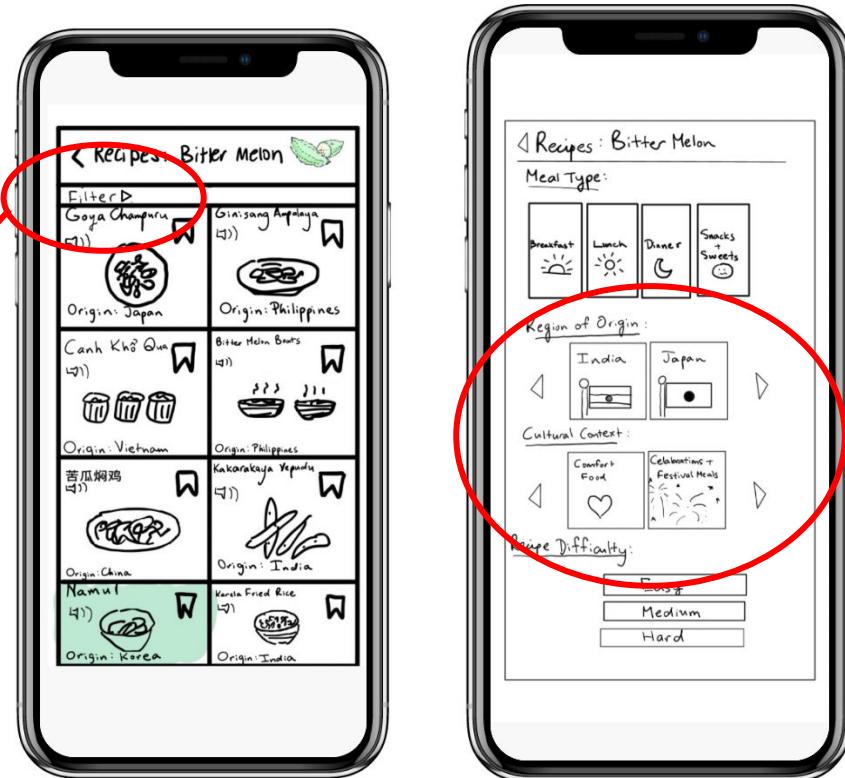
Next steps forward

- After this, we can **simplify this home page** and **make the tasks more clear**. Our additional tasks - sharing recipes, habit tracking (by saving the dishes in a long term gallery) are sort of added but not made extremely clear/ well defined through the UI



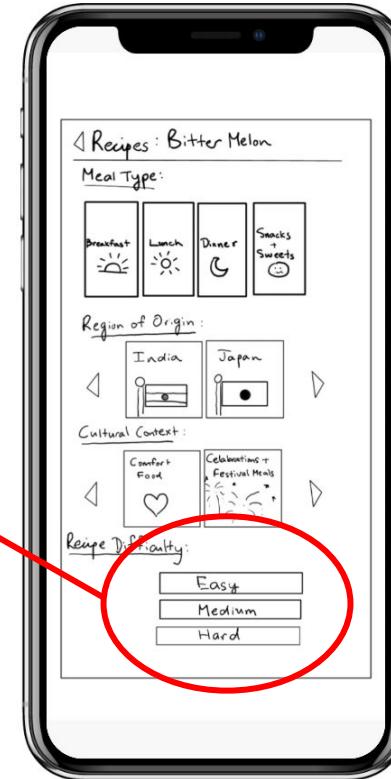
Next steps forward

- This **filter option** is a little **hidden away** (all participants had to be prompted), but sorting through recipes and being able to filter by **culture** etc is one of our main features, so we should make this **more obvious**



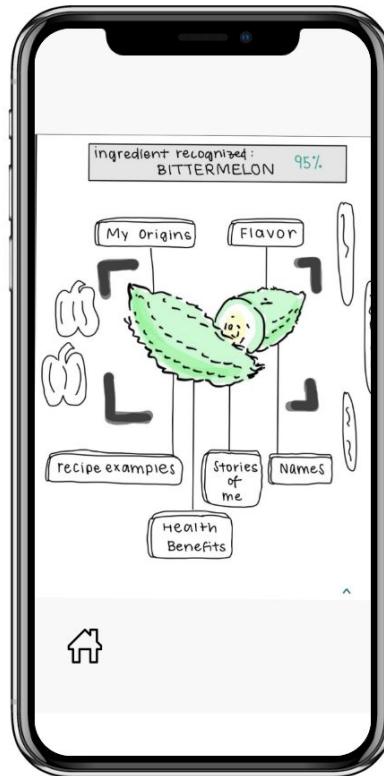
Next steps forward

- Some people prefer to **sort by time required for the recipes**, number of ingredients etc.



Next steps forward

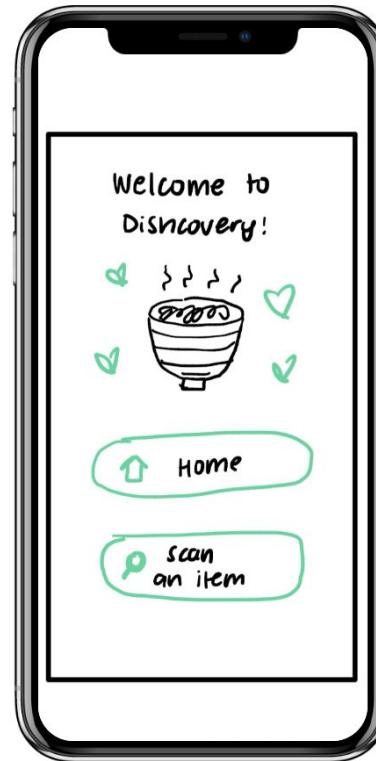
- In general, people liked the UI of this page, but actually it **was not immediately obvious what the bittermelon** is. So make a very clear “what is this item?” feature/ description at the top
- The translation or look-up of foreign items turned out to be a key feature for some participants - we **forgot to include a setting for automatic translation** (of foreign packaging on text)



Appendix

Appendix

[Link](#) to lo-fi prototype on
Marvel prototyping app



Augmented Reality: Full List of Pros/Cons

Pros

- You can work with what you have and makes shopping for ingredients less intimidating
- Ability to document what you've cooked in the past
- AI recommendation software can let the user know which recipes to try based on what they haven't cooked before and what they've enjoyed in the past
- Setting goals like "Try 1 new authentic recipe a week!" can constantly incentivise the user to try new things
- Know what you can cook with your existing ingredients
- Makes it easier to shop/more incentive to buy cultural ingredients that go well with existing ingredients you already own
- You know what to buy and what to look out for
- Potential to integrate with image recognition: showing what the final product food could look like?
- Spinning dishes are aesthetic
- Helps people visualize final dish/ cooking while they are in the mode about to cook

Cons

- May be high-maintenance to talk to the app unless it's through something like an Alexa integration
- People may be too lazy to input everything in their pantry, so each recipe may have to ask on a recipe-by-recipe basis
- Does not really target the non-food motivated audience if it is too focused on pantry organization
- Who do we source recipes from? How do we decide which recipes to recommend?
- Requires additional, often expensive hardware for AR
- May not be accessible to visually impaired users
- If they are already in the pantry, will they have a lot of incentive to go out and buy new ingredients? But maybe that's the point that it suggests things missing from the pantry too...

Image Recognition: Full List of Pros/Cons

Pros

- Real-time, fits into the cultural companion narrative as an app that is with you while you shop
- Visual learning to improve memory around food
- Variety of information is easily available to add as part of the visual experience of scanning an ingredient
- Users can already have experience with using image recognition/scanning through their camera for things like QR codes
- Really clear connection to our original tasks (helping know what something is while grocery shopping)
- Quite flexible and can add lots of UI components
- Requires no additional hardware, only a phone with an integrated camera
- Technically easier to implement

Cons

- Accuracy is imperative and might take lots of training data: risks of inaccuracy is greater with cultural stereotyping
- Navigating bias toward more common foods or cultures that are more represented
- Curating the information that populates about a certain ingredient may be difficult and require an understanding of accurate data sources to find this information
- Potentially inaccessible for those that cannot hold their phone up for a longer period of time to capture the photo
- Maybe a lot of people who are shopping for groceries in-person are in a rush and won't want to explore too much / won't want to pause and look up heaps of things
- Visual focus might not be as accessible for visually impaired users

Participant 1 & 2 - Noema and Preethi

- Allergen info
 - Preferences —> add in preferences page
 - Suggested dishes that it goes well with
 - Confusion about easy, medium, hard vs speed
 - Liked the interactive scanner
 - Keep it raw, cute vs formal
 - Add in Drinks/beverages
 - Would not look at alternate names/would look at names —> common languages
 - Can include calories/nutrition information for recipes
 - Have the scan button highlighted because that's the main part of the app
 - Partner is Italian, helpful to translate names for ingredients between languages
 - Scan me is particularly helpful —> can navigate in a foreign grocery
-

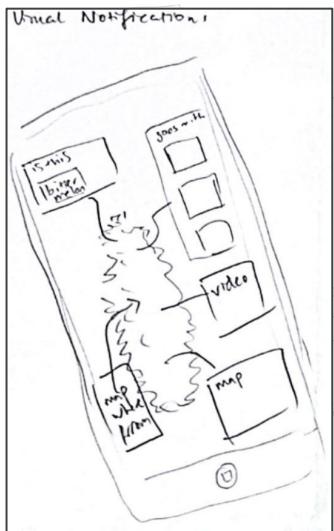
Participant 3 - Ahmed

- health benefits first, then flavor, Origins less interesting
 - Heading back to Home Screen from a single recipe instead of the recipes page
 - Seems to overlap a lot —> lists, saved, and recipes
 - Minimize friction to get to actually cooking
 - Take a photo not super clear that it's of a dish
 - Lot of clutter in top 3 options
 - Vegetarian, vegan, gluten free, etc also important to include
 - Filter by health benefits
 - Can compile recipe from ingredients
 - What is this? Setting could be good to add
 - Favorite: image recognition and getting insights on data you know on the street —> feels curated
 - Some stuff felt more edutainment, others felt more about utility
 - Background: research scientist at fb
-

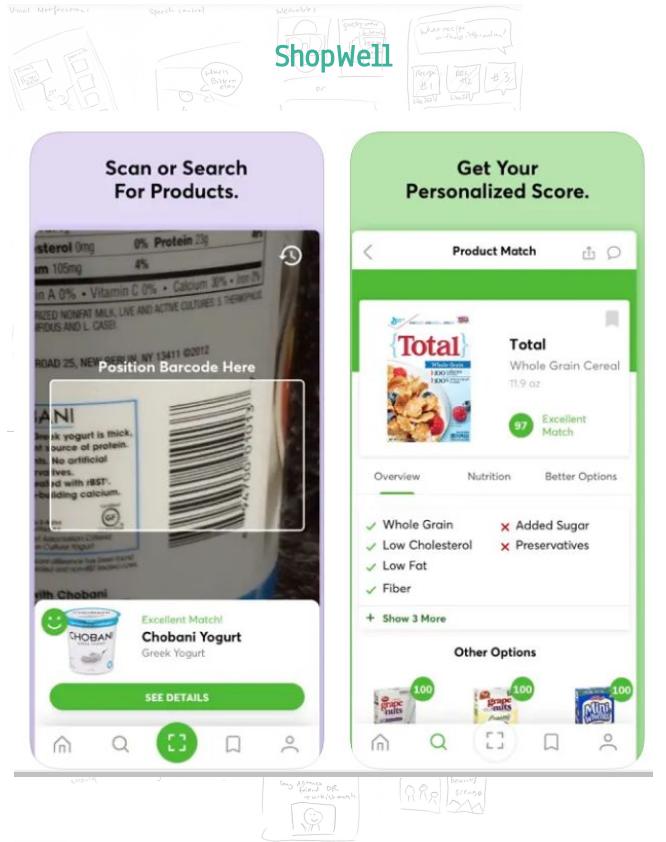
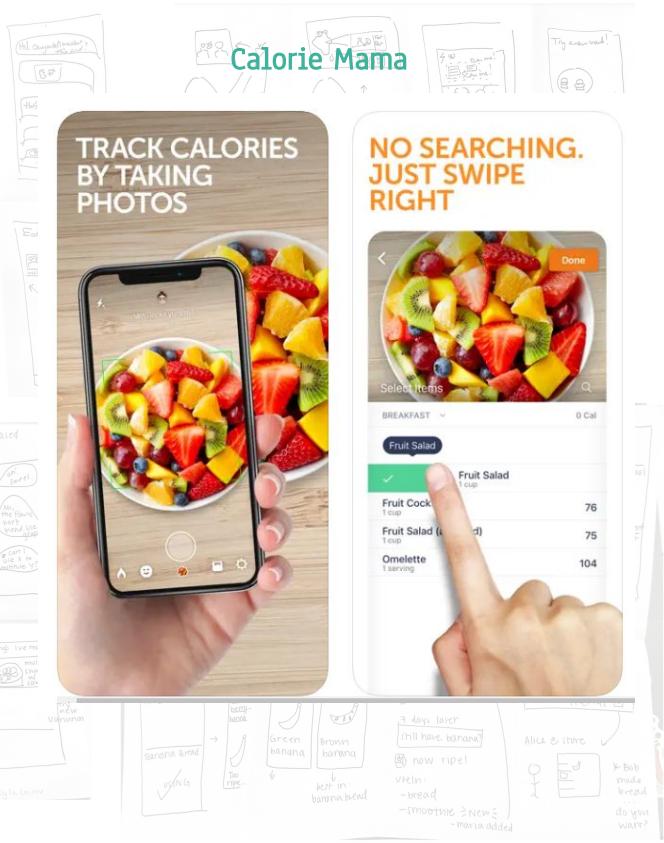
Participant 4 - Casey

- flavor first —> want to filter by that
 - Names is unclear, kind of auxiliary
 - Liked the save recipes options
 - Wants to save from a specific recipe
 - Timeframe for recipes, number of ingredients
 - More confusion about what “take a photo” meant
 - Can tag a recipe to a photo
 - Make the scan bigger
 - Most important: scanning feature
 - Can take photo and scan be merged?
-

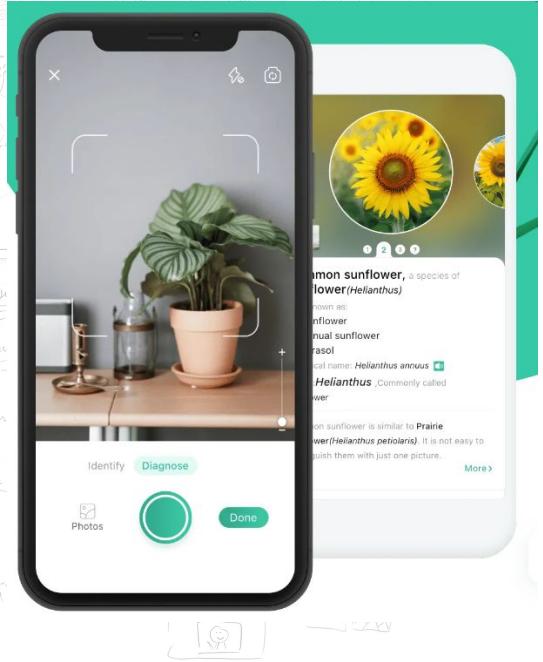
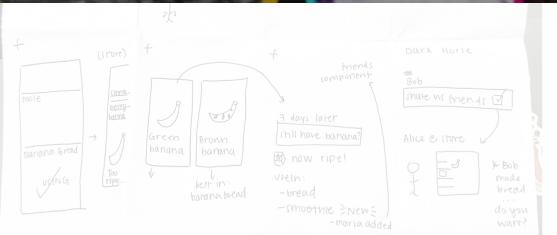
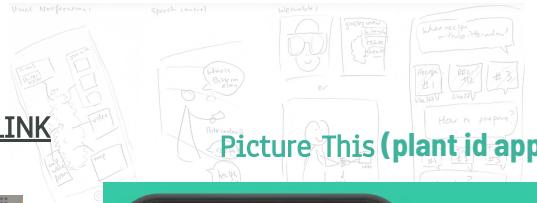
Sketch inspirations



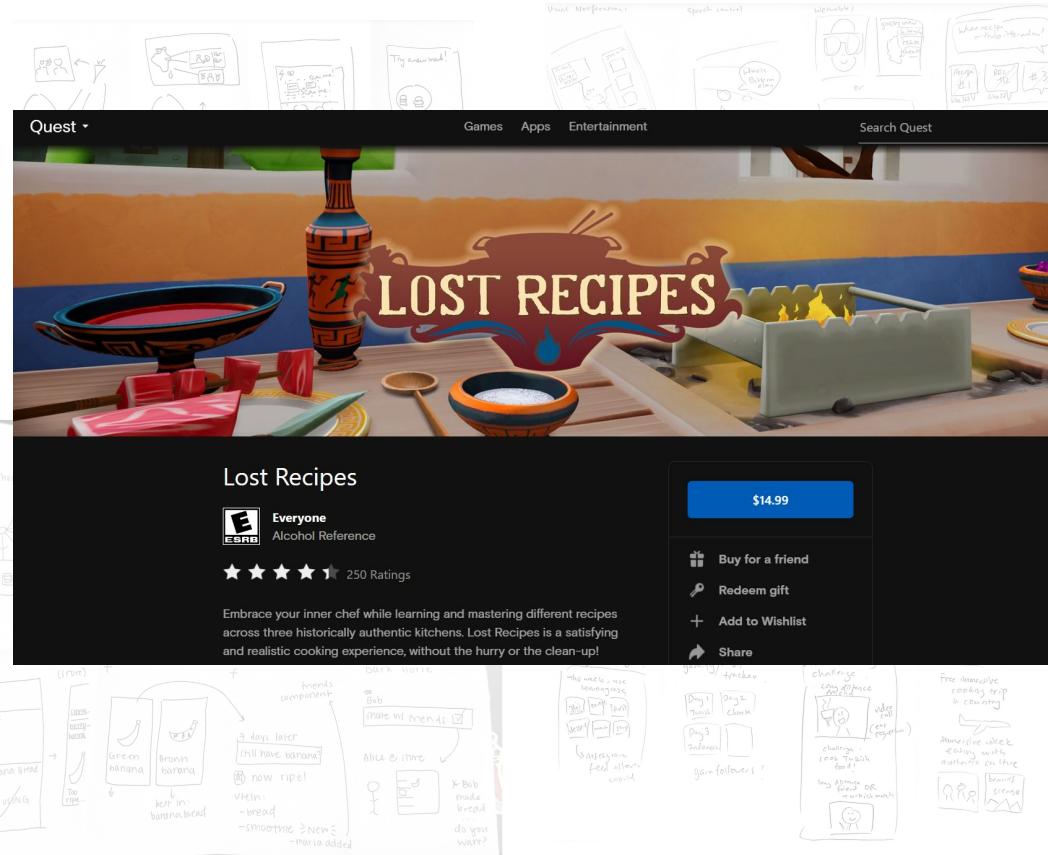
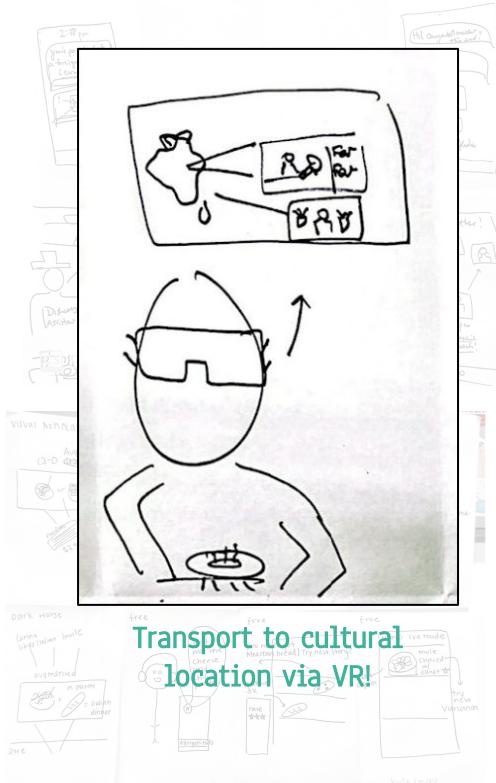
**Image recognition
with cultural context**



Sketch inspirations



Sketch inspirations



Testing Procedure

- Process
- Script Notes
 - First, provide an overview of the app's purpose and function
 - App Name: Dishcovery
 - Value proposition
 - Where you would use the app → grocery store, kitchen, etc
 - Explain what the low-fi prototype is
 - Note that we've used color to denote features that are clickable for users to try
- Roles
 - Greeter talks through the script notes
 - Computer holds the phone to present the prototype to the user
 - Facilitator prompted the user to explain their choices of what they'd clicked on in a certain order
 - Ex: "Why did you click on Health Facts first?"
 - Ex: "What made you interested in doing this kind of filtering on your recipe?"
 - Notetaker took verbal notes and maintained a voice recording of the experience
 - Prompted facilitator to ask questions about motivation for certain interactions



Dishcovery

Your cultural culinary companion