PocketChef

Final Report
SENG 310

Previous Turkeys
Jacob Lower, Nathan Denny, JJ Payne, Michael Tennant, Tyler Lin

Table of Contents

1. Problem Description

Experimenting in the kitchen can be an arduous task, especially for new chefs. People tend to get stuck in a rut, cooking the same thing day after day! Sometimes one could have a plethora of spices, vegetables, meats, and breads in their kitchen but lack the experience to make something tasty.

Not knowing what to do with what one has in their pantry can lead to loss of perfectly good ingredients. Expiring, the owner not knowing what to do with a pound of persimmons or a cup of goat milk. For some, even less esoteric ingredients like parsley, spinach, and broccoli, can go unused when one is in a slump.

For those with dietary restrictions like gluten intolerance, veganism, diabetes, and various allergies, getting creative in the kitchen can be very difficult. A majority of western recipes use bread, meat, and lots of sugar, so finding something new to eat requires a lot more effort on the cooks part if they want to stay healthy.

2. Existing Solutions

Solution 1 - Recipe Roulette:

Recipe Roulette is a meal suggesting web application that allows the user to enter their desired cuisine type (British, African, Japanese), main ingredient, and any dietary restrictions they may have, and returns a random meal which meets all the input requirements. Recipe Roulette has a very simple interface, and very few options, leaving little room for error. While this app does provide a meal suggestion based on a few parameters, it is not practical for everyday use, as it does not allow the user to narrow their meal search enough.

Solution 2 - Supercook:

Supercook is a web application which allows you to enter ingredients you own, and suggests meal you can make with your current ingredients. In addition to suggesting meals based on ingredients you already own, Supercook also allows you to add other filters to your

meal search such as which meal (dinner, lunch, breakfast, etc.), dietary restrictions, and cuisine type (Japanese, Italian, etc).

3. Proposed Solution: PocketChef

Our proposed solution is a mobile app called PocketChef. PocketChef allows users to input the ingredients they already have. The app then recommends recipes to the user based on their ingredients, which helps them decide what to cook when given ingredients they are unfamiliar with. Furthermore, PocketChef allows users to input their dietary restrictions, which will help them to find recipes that suit their needs.

PocketChef also lets users search for recipes and keep a shopping list. This helps them keep track of any ingredients they need for a recipe but don't already have. In addition, the app features a map of nearby grocery stores so the user will know where they can buy said ingredients. These features in particular will help solve the problem of finding new recipes so users don't get tired of eating the same thing every day.

4. Main Personas

This section describes the two main personas we considered during the design and used to develop the corresponding scenarios and use cases.

4.1 Emma Buzzi-Persson

Emma is a 19 year old female undergraduate student at the University of Victoria. Emma lives in a small apartment having all the standard amenities with a roommate, Aman, after they moved out of the dorms. The two roomates share a Volvo 850 (1996 series) and take turns driving it. Emma tends to drive to the grocery store and to their shared 8:30 class for cognitive psychology in the morning. This is the first time Emma and Aman live on their own, and most importantly, neither of has much experience on how to cook. For a couple weeks, they lived the

student meal life, subsisting on ramen and Kraft Dinner. Recently, Emma decided that they needed to expand their culinary horizons. After a brief search through the app store, she came across PocketChef, an app that would help her and Aman to try new foods.

4.2 Protiin Eeter

Protiin is a male worker at a local hardware store as the manager. Protiin does not cook at all but is willing to learn how to cook. He is comfortable with his eating habits and is not too interested in trying things that deviate from his normal diet. Protiin loves his meats and starches. He has started using PocketChef mainly to help him cook, so he is not just roasting steaks on the barbeque but also trying new flavors.

5. Scenarios and Use Cases

Here are the two scenarios and use cases developed based on the the main personas.

5.1 Emma Buzzi-Persson Scenario

After a long day at school, Emma and her roommate, Aman, are driving on their way home from school. Emma and Aman have no idea what to eat for breakfast tomorrow, so they decide to use PocketChef to try out something new. While Aman is driving, Emma starts exploring the app. After Emma finds the food they want to try for breakfast tomorrow and saves the recipe, she follows the directions and guides Aman to the nearest Thrifty Foods shown on the map in the app . At the Thrifty store, Emma uses PocketChef to identify the the items she does not recognize on her ingredient list.

5.1.1 Use case 1: Driving home from school

1. The user is a passenger in a moving car.
2. PocketChef detects that the phone is in a moving vehicle and then displays a message for the user to select from the driving mode or the passenger mode.
3. The user selects the passenger mode.
4. The user taps the “Suggest Meal” button from the main menu.
5. The user taps “Breakfast” button, and then the app displays a list of suggested meals based on previous meals that the user has searched.
6. The user selects “Oatmeal” from the list leading to a page with the recipe.
7. The user taps “Saved Recipes” to save the recipe to her phone and add the required ingredients to the app’s shopping list.
8. The user goes back to the main menu and taps the “Nearby Stores” button.
9. The app shows a map with directions to the nearest grocery store.
10. The user gives directions to the driver to the nearest Thrifty Foods.
11. In the store, the user opens PocketChef and taps on “My Ingredients”.
12. The user sees red bell pepper in the shopping list but does not know what it is.
13. The user taps on the “Identify” button and light from camera turns on with display of what the phone is seeing.
14. The app uses computer vision to identify items on the list and draws a green box around the detected items that is easy to notice.

5.2 Protiin Eeter Scenario

On Friday night, Protiin is relaxing and is not willing to go out and shop for food. Protiin wants to try some new food with what he currently has in the refrigerator, he opens PocketChef to search for some meal suggestions for dinner. After he decided what to make from the suggestions, Protiin feels too lazy to follow the text instructions step by step. Hence, he decided to watch the how-to-make video. Protiin watches the video and saves the recipe for later usage.

5.2.2 Use case 2: At home, cooking with the food in the refrigerator

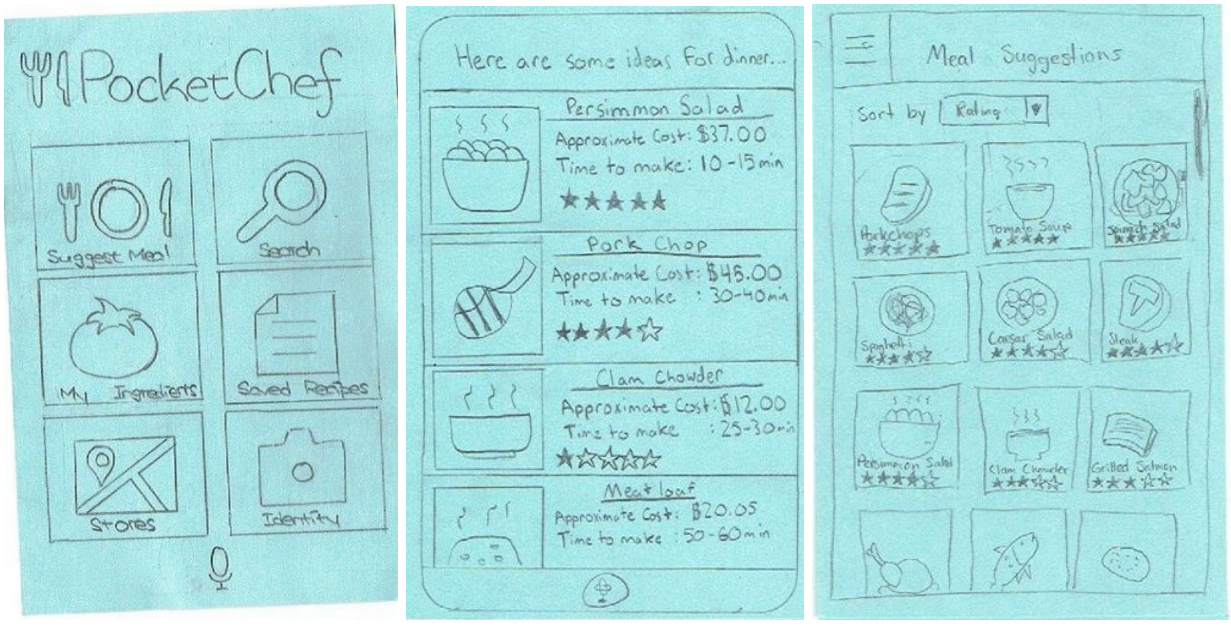
1. The user opens PocketChef and taps the “Suggest Meal” button from the main menu.
2. The app prompts user to select which meal he is preparing (i.e., breakfast, lunch, dinner, or snack), and the user selects the “Dinner” option.

3. The app returns a list of dinner suggestions presented as a list of pictures, titles, and user ratings in the form of stars.
4. The user goes to more suggestions, and then the user selects a meal from the list by tapping on the item.
5. The image blows up with the list of ingredients, how-to-make videos, and text instructions all shown below the image.
6. The user scrolls down and up to navigate and plays a how-to-make video.
7. The user adjusts play position with a progress bar.
8. The user scrolls to the bottom of the page and saves the recipe for later.
9. The user checks to see if the recipe is actually saved.

6. Evolution of the Prototype

In this section, the evolution of our PocketChef prototype is demonstrated.

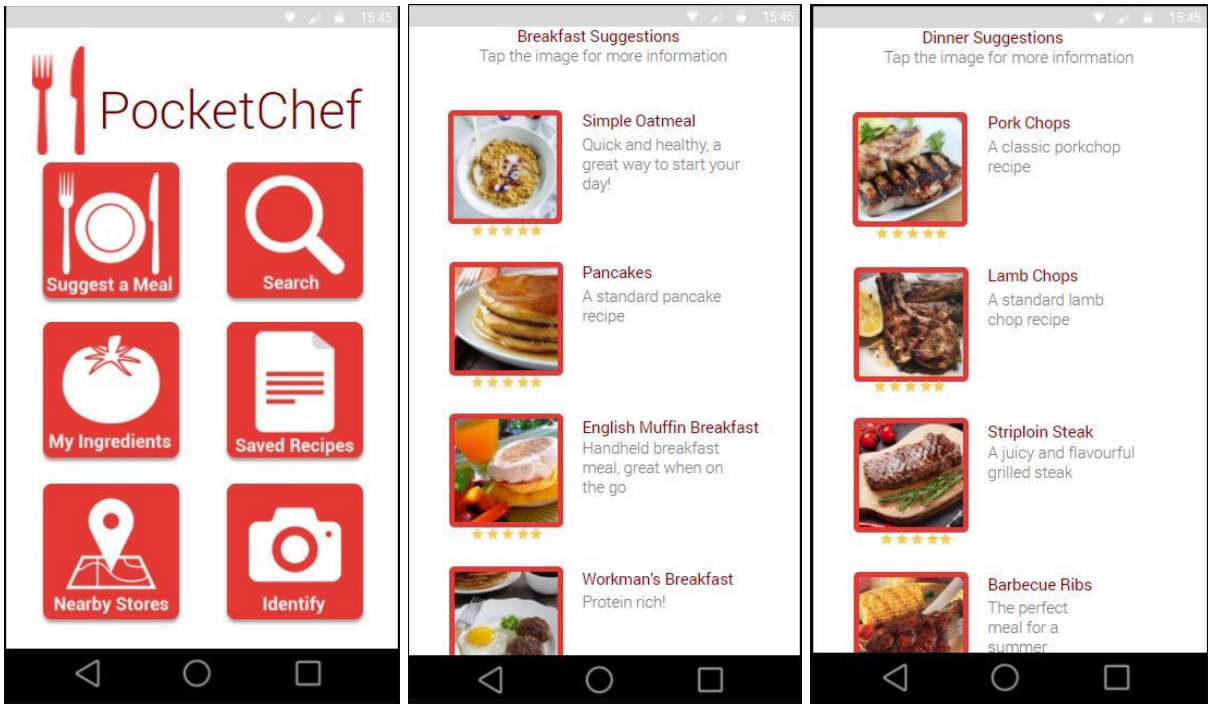
Low Fidelity Prototype:

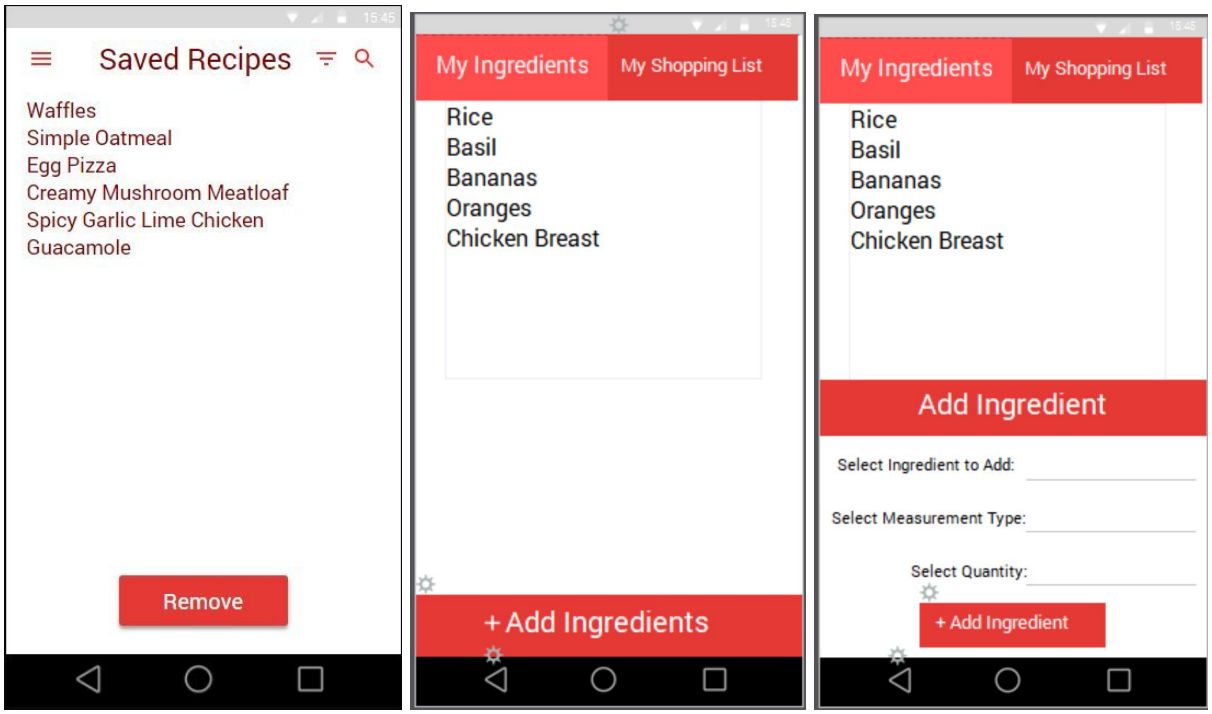


The two biggest problems with our low-fidelity prototype that we identified during peer review were the lack of a consistent back button and the inconsistency between list view and tile view for the meal suggestion feature. Additionally, the team which reviewed our low-fi prototype

was concerned with PocketChef's reliance on smart applications such as a smart car and a smart fridge.

High Fidelity Prototype:





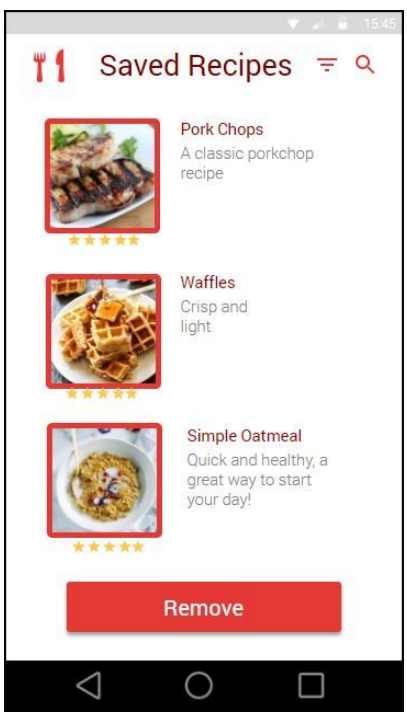
For our high fidelity prototype, we updated all of our screens to have a consistent menu bar which contained a back button. Additionally, we got rid of the tile view on our meal suggester and focused only on the list view. To allow users who do not have a smart fridge to effectively use our app, we allowed them to manually add ingredients to their ingredients list, and implemented a passenger mode for users who do not own a smart car.

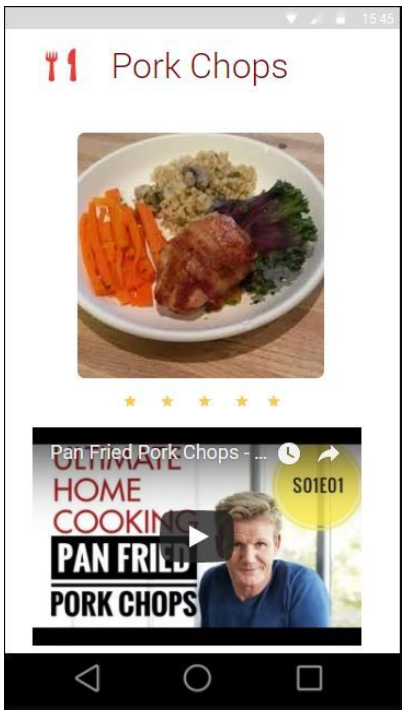
While we solved some issues with our updated prototype, we were given recommendations to further improve our design. Some of the recommendations include:

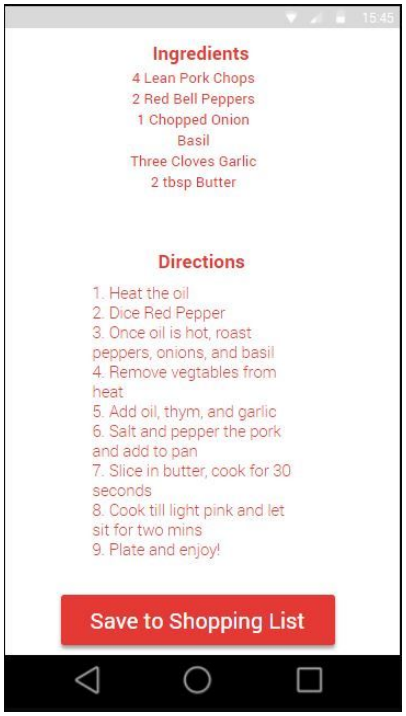
- Larger video player for recipe walkthroughs
- Better search parameters for the search function
- Added pictures to the My Ingredients page
- Remove red border from recipe steps and ingredients list
- Add headers to recipe steps and ingredients list

Updated High Fidelity Prototype:

Addressing the changes suggested during the first presentation, we made some adjustments to the final Hi-Fi prototype.



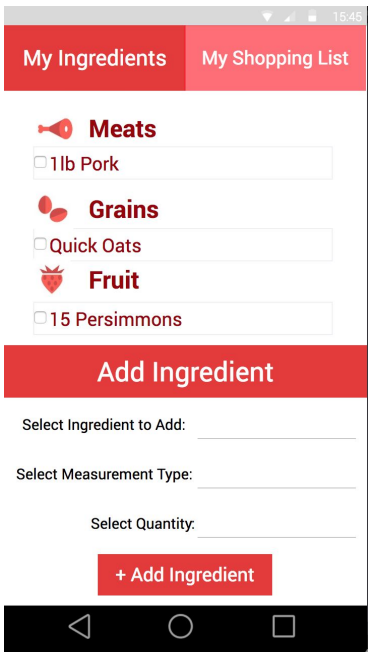


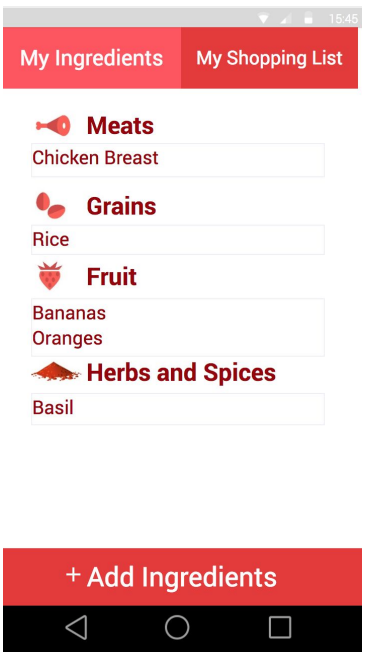


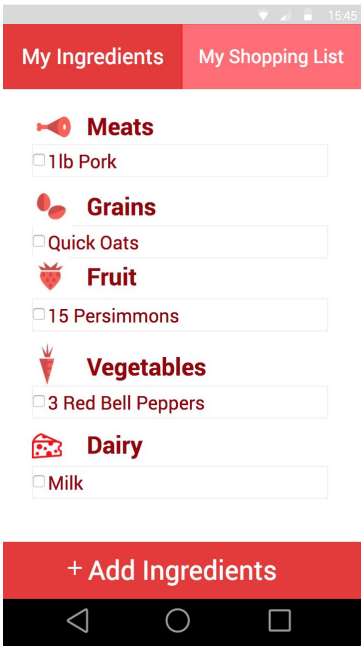
For better viewing while cooking, we increased the size of the video player. In this way, the user will be able to view the video from a greater distance while cooking; facilitating ease of use.

On an aesthetic note, we removed the red borders of the ingredients and directions steps as well as adding headers.

We made a large change in the saved recipes; added images of the food and imitated the style of the meal suggester. By keeping the style consistent, the user will need to remember less and become familiar with the layout of the app must faster. Reducing cognitive load and taking advantage of a light memory requirement for the user.







Finally we changed the layout of the shopping list and ingredients page; adding in icons and organization to help the user navigate these pages. In this way, the user will be able to snap to key item types with great ease.

For ease of navigation, we also included a home function in the form of the logo around all the major pages.

6. 2 Cognitive Walkthrough

After our low fidelity prototype is completed, the group Medium performed a cognitive walkthrough on our prototype. We took their advice into consideration in our design of the high fidelity prototype.

Things they liked:

- Image representation of food items
- Consistent speech command access
- Well designed conceptual model and signifiers (i.e. intuitive to use for the first-time users and easily identifiable icons)

Things they thought that could be improved:

- Recipe videos could be located at the bottom of the page
- Exit app button could be removed
- Text recipe instructions could be numbered

Things they recommended:

- Have a persistent top bar or menu bar to aid with navigation
- Present the function to the meal selection as icons or a list
- Design with smart refrigerator should be limited

6.3 User Evaluation

The user evaluation was done after working on the high-fidelity prototype in order to answer the following questions:

- Are any affordances missing from the main menu

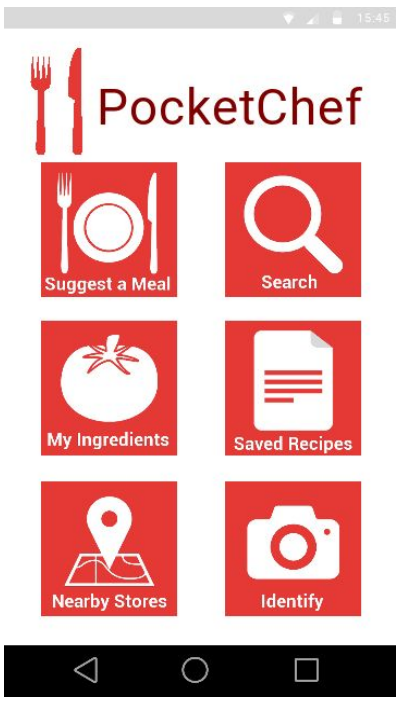
- Does our app need a help or tutorial page?
- Does the app feel too restricting in its linear progression of pages?
- Do any of the features seem unnecessary?

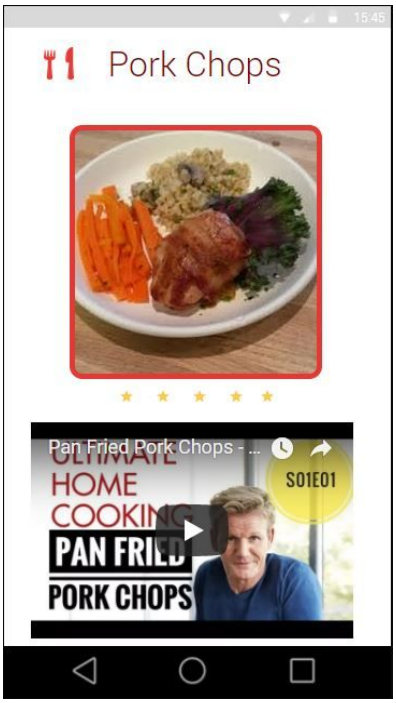
During the evaluation we asked users to perform the following tasks:

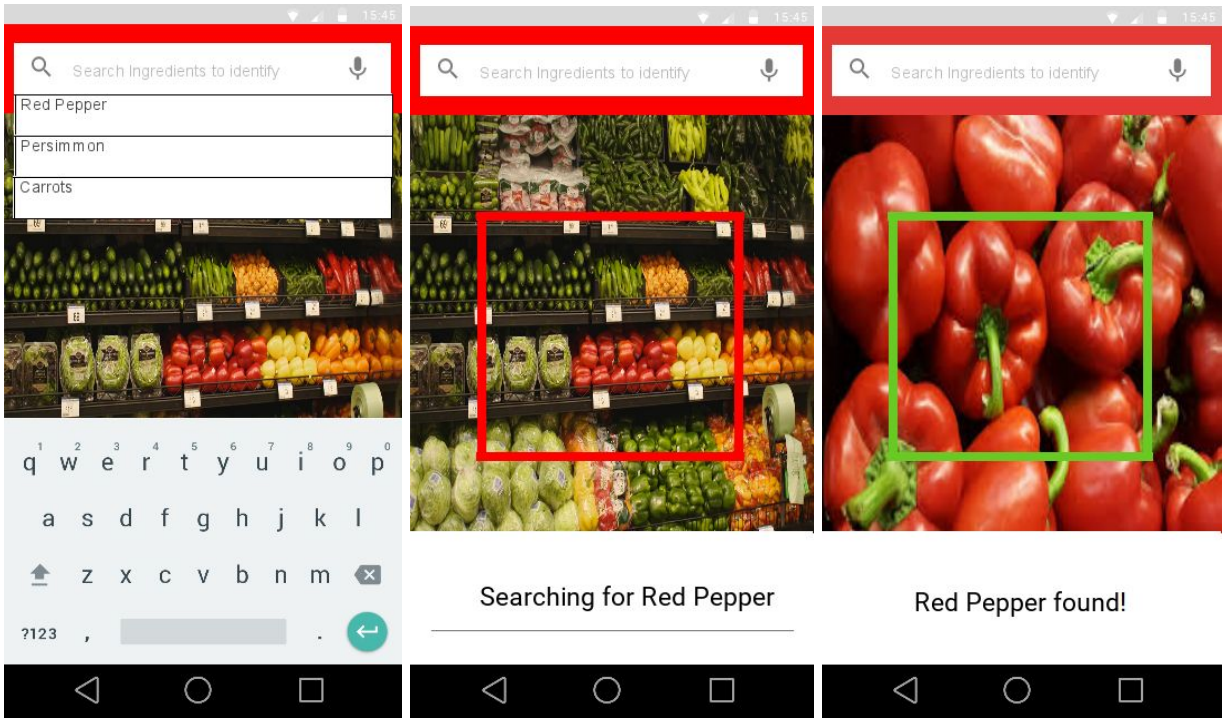
- Open the meal suggester and choose a meal to make
- Use the map to find places to get ingredients
- Purposefully make a mistake and try to make it back to where they want to go
- Browse the ingredients list
- Find certain recipes and add ingredients to shopping list
- Use identify feature to find ingredient
- Add a recipe to the saved recipes list

7. High-Fidelity Prototype

This section presents the final version of our high-fidelity prototype made with the prototyping tool, Just in Mind. Several screenshots are shown below with a link to our prototype.







Link to the prototype:
https://www.justinmind.com/usernote/tests/32920162/32955617/33458056/index.html

8. Future Work

We would implement a user profile/account to act as a quick and easy way to adjust settings between users and to maintain food preferences across devices. We would also consider altering the Select Meal Category screen as it is a bit redundant and may make users feel forced into making a decision too soon. On the Recipe screen we would move the video guide to be lower on the screen and to have more horizontal space so that it is more easily viewable. The prototyping software we used had UI limitations. In an actual implementation of the project we would like to add fitting transitions between screens and include progressive disclosure elements to our design.

On note of the profiles, these would greatly increase the viability of including dietary restriction settings to increase safety and accessibility to all users. We aim to have PocketChef be a fully inclusive and comprehensive app that addresses as many dietary needs as possible.

9. Lessons Learned

9.1. Proper design process workflow

As a whole, we discovered that our design process did not follow the exact workflow that was outlined in the lectures, but instead took pieces from recognized processes and used these pieces to create a design process that worked for us. For example, we found ourselves looking between design alternatives and the low-fi prototype for a few work sessions. In this way, we were able to implement the iterative loop from the evaluation process into the process of interaction design. We developed multiple low-fi prototypes with varying styles, functions, and even problems to be addressed. This loop between developing the low-fi prototype and exploring solutions helped us in the long run by solidifying what our final product would ultimate look, function, and feel like. We had plenty of time to analyse and come together as a group on decided which of our variants was the optimal solution to the problems we wanted to solve.

9.2. Development of the prototype

Through the development of our low-fi and hi-fi prototypes, the biggest thing we learned was that our prototype could never be perfect. Despite our best attempts to solve every possible problem we could think of, evaluators of our prototypes were always able to point out obvious flaws with our design. This taught us the importance of an external opinion, as we were able to fix numerous flaws in our design by listening to criticism of our low-fi and hi-fi prototypes.

When creating our hi-fi prototype, we learned about the tradeoff between appearance and functionality. Before we even began building our high-fidelity prototype, we had trouble finding a program that was able to create a good looking, functional prototype. Programs like Balsamiq and InVision sketch were easy to use but didn't provide the appearance of a high-fidelity prototype. Other tools such as Photoshop and Axure could create good looking screens, but had a steep learning curve when it came to putting it all together into a complete prototype. In the end, we chose JustInMind, as it allowed us to create decent looking screens without any difficult to learn features.

9.3 Generating and conducting research

When creating our first survey, we realized that it was hard to make the survey questions consistent with each other. While it was easy to make the multiple choice answers to each survey question consistent (very good, good, average, bad, etc), creating questions that were able to be answered in this fashion was harder than expected. Once we had formulated our survey, it was extremely easy to find subjects to complete our survey. The ability to send a link to the survey along with the quick time to complete it allowed us to gain feedback from over 15 subjects in under one week.

Contrary to creating our pilot survey, creating the evaluation plan for our user walkthrough was quick and intuitive. The fact that we had a concrete idea about possible problems and the direction we wanted our app to follow allowed us to create appropriate use cases for the walkthrough. The results from our walkthrough gave us feedback on our app that we had never thought of and also let us know what features the user liked the most.

9.4 Other valuable experiences

In addition to the lessons we learned about design workflow, developing prototypes, and conducting research we learned how to work in an organized group with

others in an effective and cohesive manner. This process truly deepened our appreciate for group work and bolstered our abilities by relying on each other for support.

Appendix A - References:

[1] A. Rozenblatt, “Supercook: recipe search by ingredients you have at home”, *Supercook.com.* [Online]. Available: http://www.supercook.com/#/recipes .
[Accessed : 01 - 04 - 2018]

[2] “Recipe Roulette”, reciperoulette.tv. [Online]. Available http://www.reciperoulette.tv/ .
[Accessed : 01 - 04 - 2018]

Appendix B - User Evaluations:

Use Case for User Evaluations:

Using a script to guide ourselves the user through the app, we tested five individuals to see if our core goal of creating an intuitive design was achieved; or how we can better change the app to get our desired result. We tested ourselves against that of the user to see how someone familiar with all the ins and outs of the app compared to someone completely new to PocketChef.

User Evaluation Results:

Nathan’s User Evaluation:

1. Can the user, from the start page, find a recipe for oatmeal.
2. How many clicks did it take?

   a. Myself: 5
   b. Subject: 8 (3 errors made)
3. What was the subjects overall mood?
   a. Inquisitive. Liked the icons and was interested in potential of final product.
4. Did the user find the layout of the app to be intuitive?
   a. Yes. Could have been more direction. Add select an option to front page
5. Comments of the user
   a. Should be able to click the entire recipe
   b. Add shopping list header
   c. Implement a search by my ingredients feature

Mike's User Evaluation:

1. Can the user, from the start page, find a recipe for oatmeal.
2. How many clicks did it take?
   a. Myself: 3
   b. Subject: 5
3. What was the subjects overall mood?
   a. Excited about the concept. Likes the main page, shopping list, graphic design. Really likes mapping function and identify function.

4. Did the user find the layout of the app to be intuitive?
   a. Yes. They felt the app's logic was easy to follow.
5. Comments of the user
   a. They wanted a different color scheme (teal blue). Maybe add color themes?
   b. Improve visuals of my ingredients and my recipes.
   c. They thought it would be a good idea to partner with grocery stores and give the users a map of where to get the ingredients inside the store.

Jacob's User Evaluation:

1. Can the user, from the start page, find a recipe for oatmeal.
2. How many clicks did it take?
   a. Myself: 3

    b. Subject: 7
3. What was the subjects overall mood?
    a. Positive, liked the art
4. Did the user find the layout of the app to be intuitive?
    a. Their answer: Yes, it's simple and easy to follow
    b. Observations: Had some trouble when scrolling, got distracted by other buttons
5. Comments of the user
    a. Improvements: Needs a settings function, maybe a profile, and more accommodations for people with nut allergies
    b. What they enjoyed: The colour and layout, as well as it's simplicity and the variety of suggestions
    c. Would they use this app: Yes!
    d. Would they seek out this app: Most likely not on their own, they'd need someone to suggest it to them

Tyler's User Evaluation:

1. Can the user, from the start page, find a recipe for oatmeal.
2. How many clicks did it take?
    a. Myself: 3
    b. Subject: 4
3. What was the subject's overall mood?
    a. Positive, liked the UI design
4. Did the user find the layout of the app to be intuitive?
    a. Their answer: " Yes, it's easy and intuitive to use the app!"
    b. Observations: Yes, but the user tends to have difficulty to find the recipe instructions.
5. Comments of the user
    a. Improvements: "Maybe show the recipe instructions at the top and the recipe video at the bottom"
    b. What they enjoyed: "The meal suggest function and the UI design."
    c. Would they use this app: "Yes, I would."

John's User Evaluation

1. Can the user, from the start page, find a recipe for oatmeal.
2. How many clicks did it take?
    a. Myself: 3
    b. Subject: 5
3. What was the subjects overall mood?
    a. Positive, enthusiastic about the concept.
4. Did the user find the layout of the app to be intuitive?
    a. Yes.
5. Comments of the user
    a. Improvements: Implement the search function
    b. What they enjoyed: Liked how the interface was set up (visually pleasing), liked that the recipes had pictures next to them
    c. Would they use this app?: Yes they would.