CS147: LOW-FI PROTOTYPING & PILOT USABILITY

Team: 4's A Crowd

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TA: Chris Min
Studio Theme: Crowd Power
Project Name: Munch

INTRODUCTION

Team 4's A Crowd distilled the application concept for Munch into a concise value proposition: *instant location-based dining promotions*.

Over the past five weeks, the team conducted a series of user interviews and tested several experience prototypes with appropriate audiences. From our analysis of collected data, we identified a cross-cutting problem, that *cheap food is often lower in quality, and good quality food is often too expensive to eat frequently*. Munch was conceptualized as a digital solution to meet this problem, *offering instantaneous, location-based dining promotions so that consumers can find reasonably-priced eating options and restaurants can moderate demand and control excess food supplies*.

TASKS

Based on the assignment requirements, we decided to revise the three tasks we identified last week. The initial tasks we designed took a broader look at Munch's impact on both the dining consumer and the restaurant owner (See Appendix B for original tasks). In order to decide which audience to design for this week, we took Uber as a case study. We realized that the vast majority of Uber's users interact with the consumer-facing facet of the application, and that only a small percentage of users (specifically, Uber drivers supplying the service) interact with the "supply" interface of the application. Analogously, most of Munch's expected users will be consumers, so

we decided to focus our initial UI-design efforts on producing a higher quality consumer-facing product.

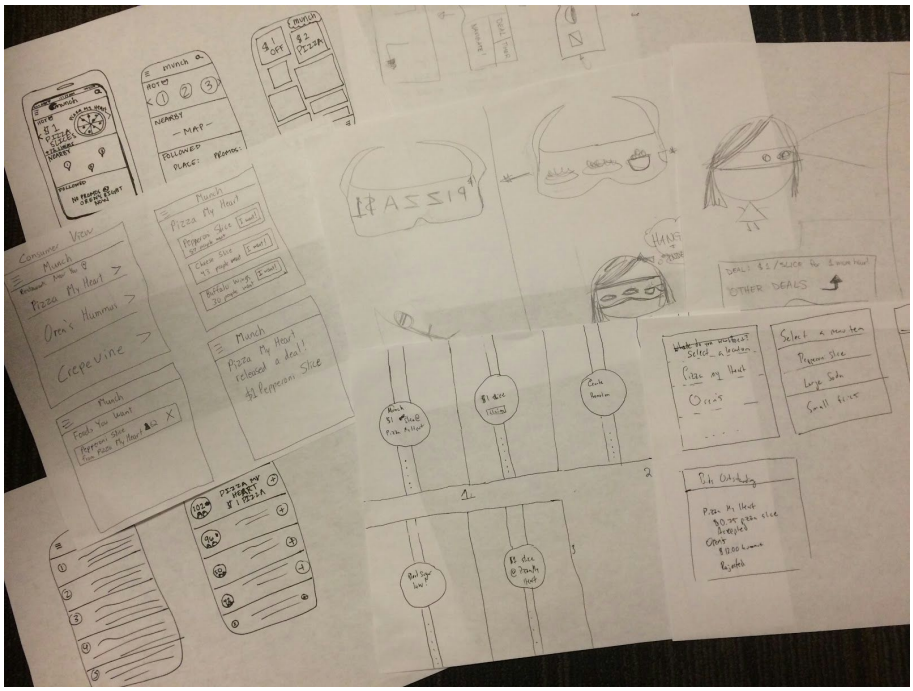
Modified Tasks:

Level	**Task**
Simple (common or introductory)	Consumers find nearby restaurants offering flash promotions
Medium	Consumers track their eating and spending habits over time
Complex (infrequent or for power customers)	Consumers improve their dining experience and reduce the stress of indecision while exploring new places

USER-INTERFACE SKETCHES

We brainstormed and sketched implementations that spanned the spectrum of product-types: a wrist-band wearable, a Google-glass integration, and two distinct mobile applications.

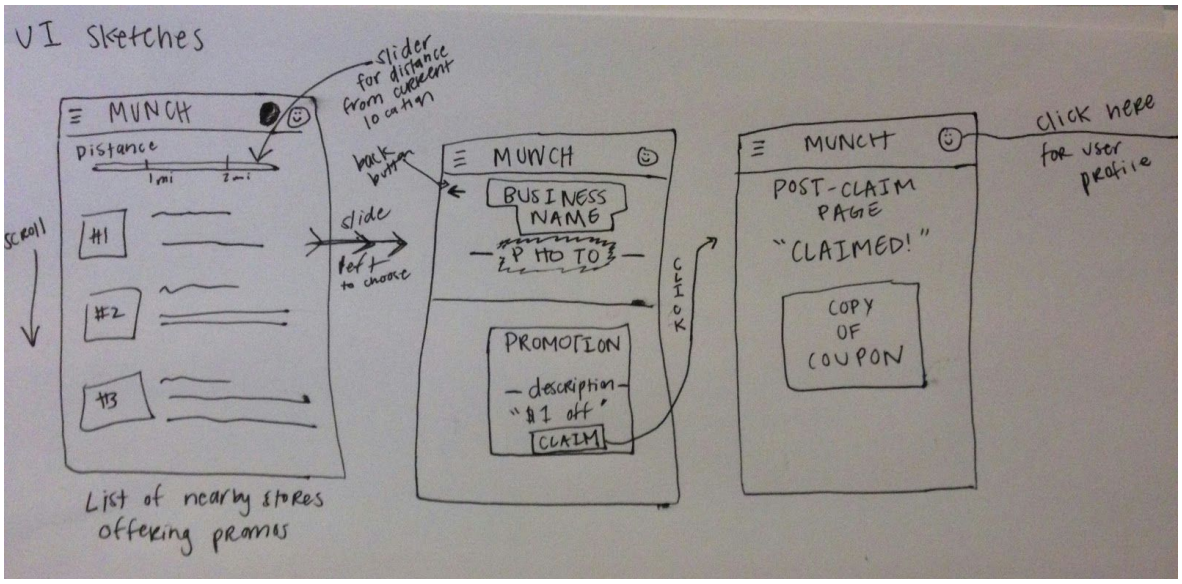
Below is an overview of our sketches:

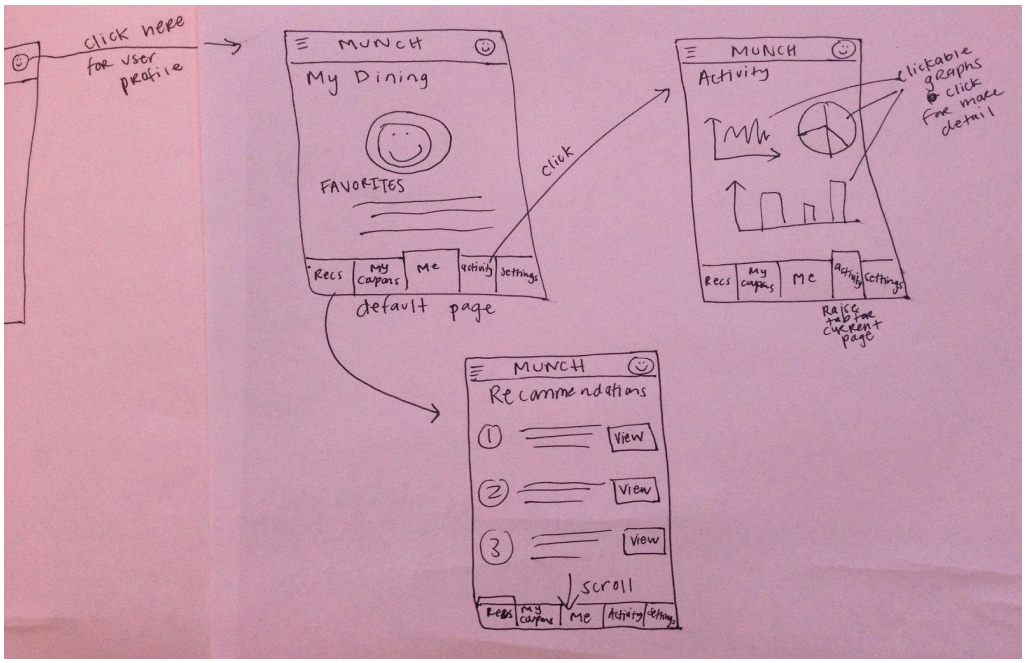


We then picked the two realizations that we found the most compelling and storyboarded the interface designs in greater detail. We chose to dig deeper into the two diverse mobile application concepts.

Storyboard Sketch #1: Location-Centric & Restaurant Owner Driven Promotions

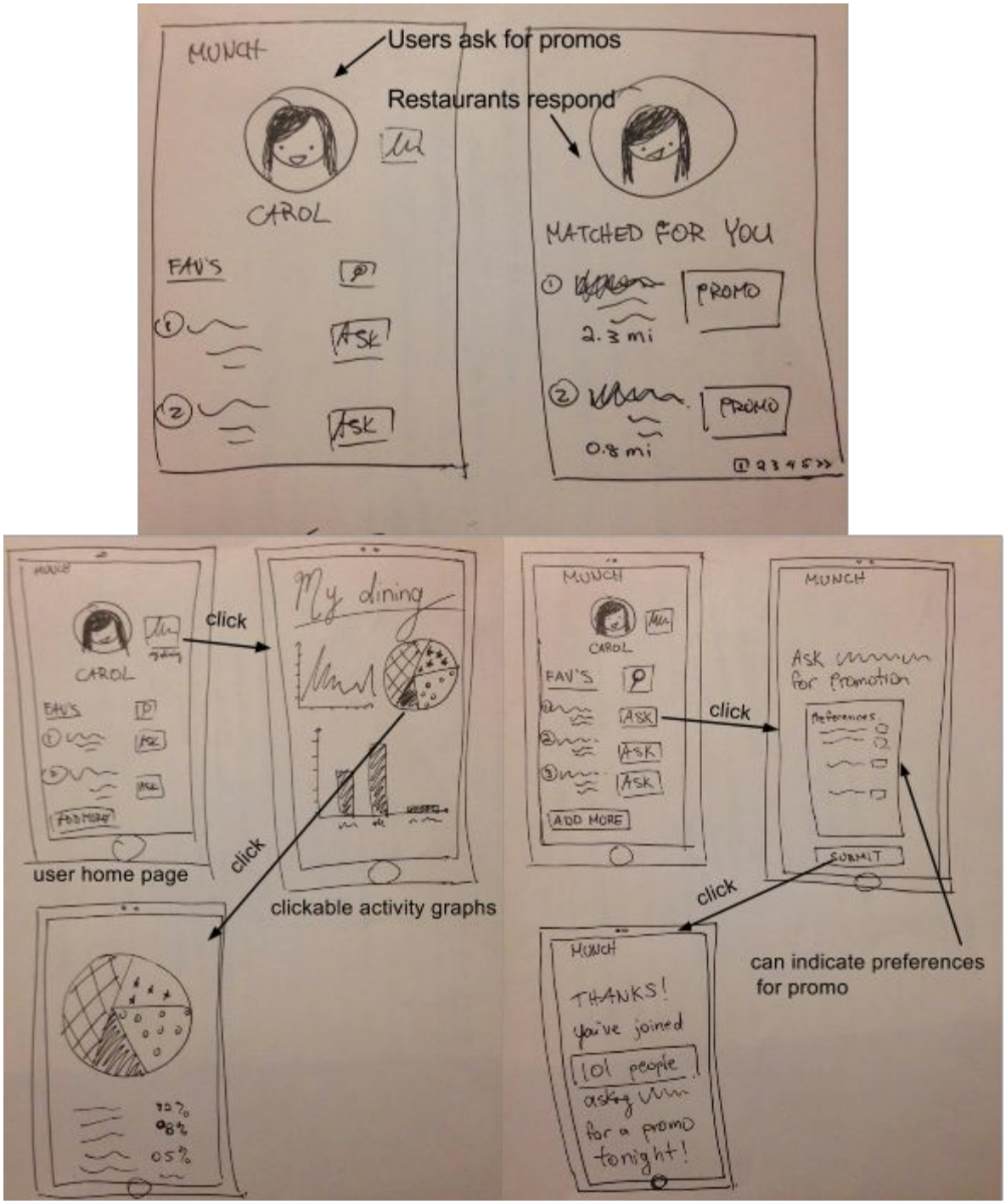
Restaurant owners post promotions that are filtered by location and displayed to consumers to claim and use:





Storyboard Sketch #2: Consumer-Preference Driven Promotions

Consumers own personal dining profiles from which they can indicate demand for an item and "request" deals for it. Restaurants can then analyze the desires of the crowd and issue promotions to take advantage of crowd-indicated demand.



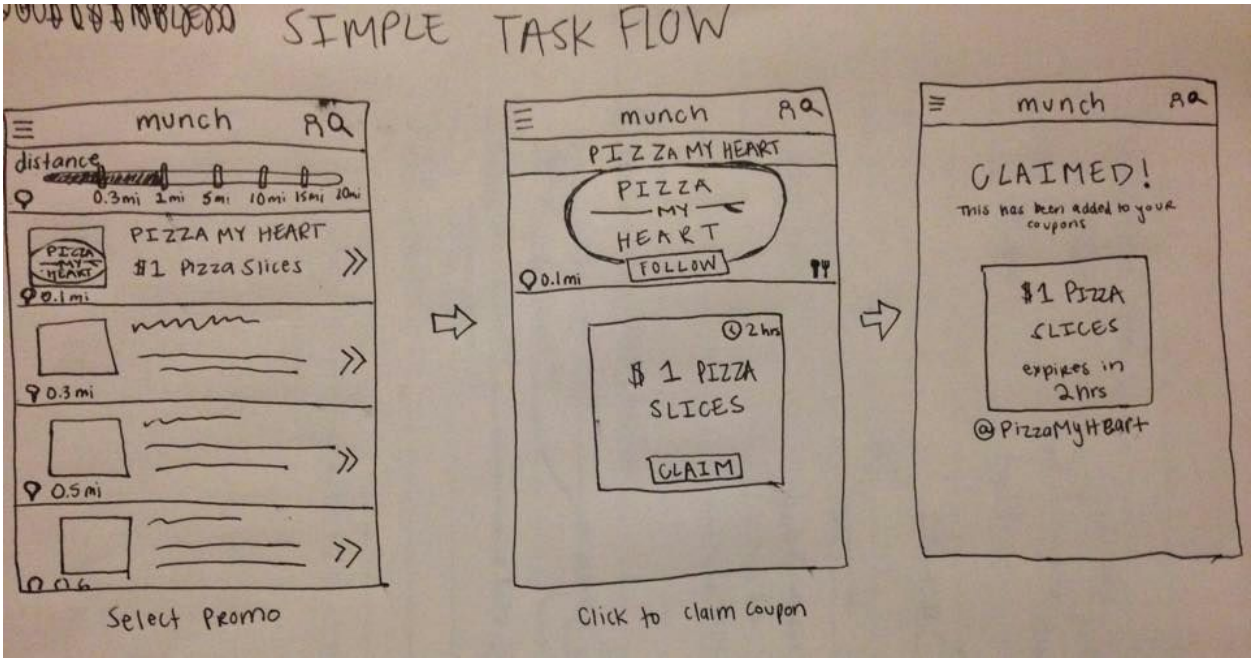
SELECTED INTERFACE DESIGN

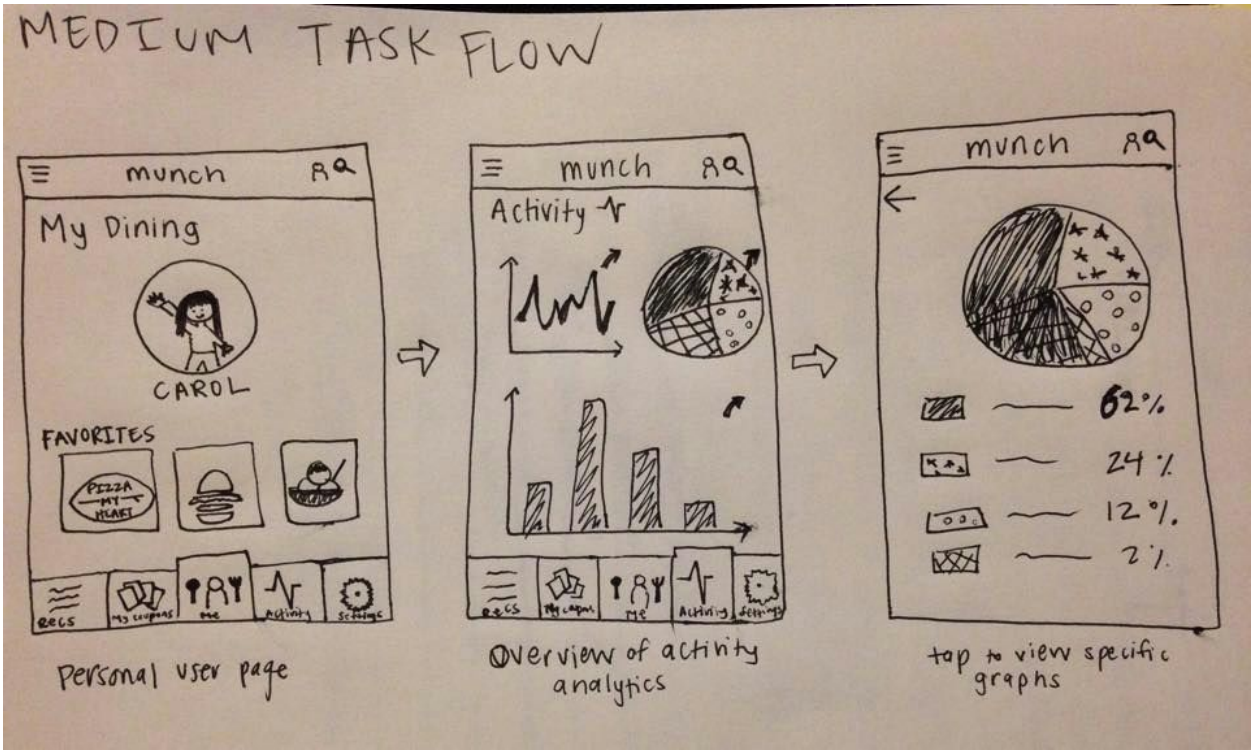
We narrowed our product realizations even further; from our top two ideas, we selected the design represented in the section above by "Sketch #1 Location-Centric & Restaurant Owner Driven Promotions" for continued exploration. We chose this design because we found that it allows for a more consistent and potentially more sophisticated user experience. Our second design "Sketch #2" relied heavily on the timeliness and responsiveness of restaurant managers/owners to approve or deny requested promotions. While restaurant owners liked having more control over the demand chain, "Sketch #2" also gave them additional stress by expanding the audience they were required to directly manage. "Sketch #1", on the other hand, still gives control to the manager by giving them the authority and means to create and push flash deals, but the mechanism by which the deals are transferred is taken out of the hands of the manager. The manager never has to directly interact with the consumers through the application, and we directly cut out the issue of consumer-manager dependencies.

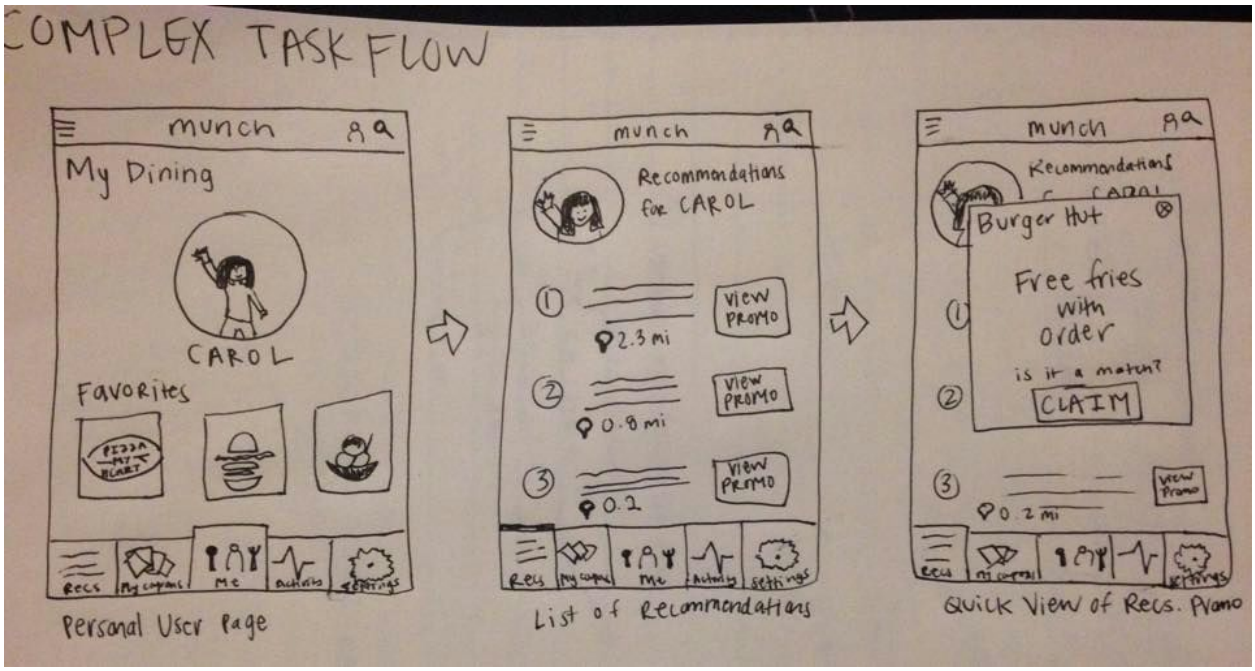
Included below are sketches of the simple, medium and complex task flows for our selected implementation of Munch as well as a table indicating the available functionality:

Functionality Table

Simple Task: Find Recommendations	User starts at promotion search screen. Slides left on a deal to see more information. Clicks "Claim" to claim the promotion.
Medium Task: Track eating and spending habits	User starts at personal user page. Clicks "Activity" from bottom nav bar. Clicks on graph to see more information.
Complex Task: Use recommendations to better dining experience	User starts at personal user page. Clicks "Recs" from bottom nav bar. Clicks "View Promo" to see more information. Clicks to accept or reject the promotion.
Miscellaneous: Functionality seen in Storyboard	Can use distance slider to narrow/broaden results. Can follow/favorite businesses which will show up on personal page. Can view all claimed coupons under "My Coupons".


SIMPLE TASK FLOW
munch
distance
0.3mi 1mi 5mi 10mi 15mi 20mi
PIZZA MY HEART
$1 Pizza Slices
0.1mi
0.3mi
0.5mi
Select Promo
munch
PIZZA MY HEART
PIZZA MY HEART
FOLLOW
0.1mi
2hrs
$1 PIZZA SLICES
CLAIM
Click to claim coupon
munch
CLAIMED!
This has been added to your coupons
$1 PIZZA SLICES
expires in 2hrs
@PizzaMyHeart


MEDIUM TASK FLOW
munch
My Dining
CAROL
FAVORITES
PIZZA MY HEART
recs
my coupons
me
activity
settings
Personal user page
munch
Activity
recs
my coupons
me
Activity
settings
Overview of activity analytics
munch
62%
24%
12%
2%
tap to view specific graphs

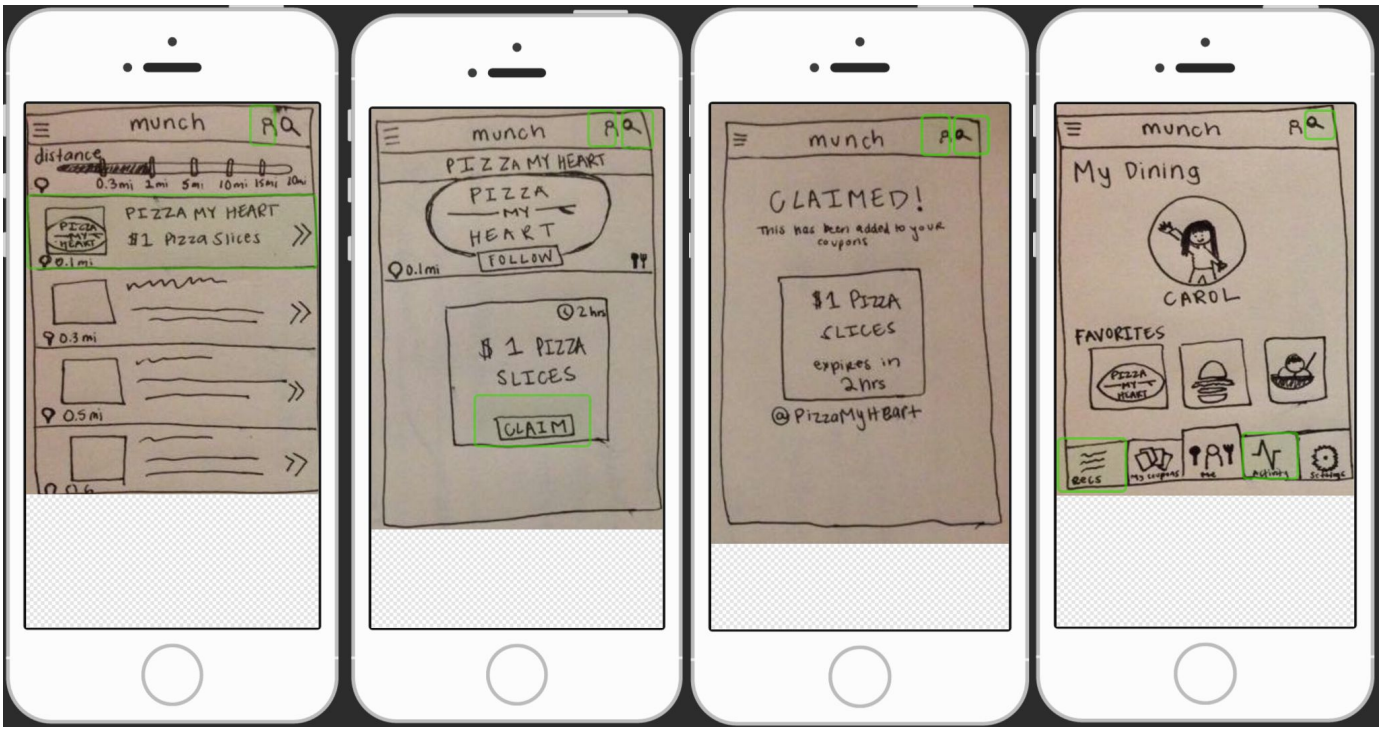


PROTOTYPE DESCRIPTION

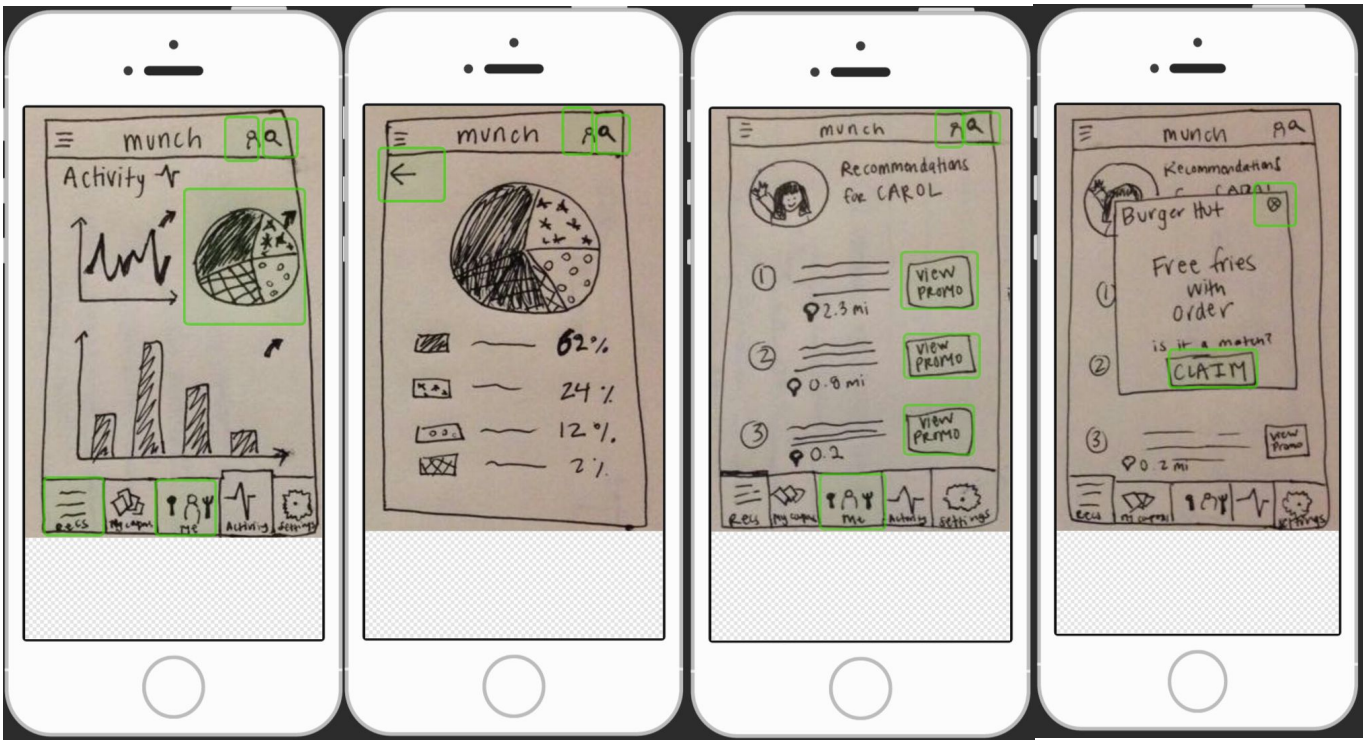
POP Prototype

The main pieces of functionality in our prototype are the three consumer tasks we outlined above. To achieve this functionality, we created our prototype using the UI screens presented in our storyboard. We used POP, which enables paper prototypes to be imported via pictures and then linked together dynamically. The prototype was designed such that users would interact with the POP app via tapping, and this touch input serves as the main interaction between the user and our app.

The app consists of two main sections. The first section is the search section where the user actively searches for nearby promotions. This section can be seen with the simple task flow. The second section is the user section where the user can view all information relevant to their personal profile such as favorites, activity, and recommendations. This section is seen with the medium and complex task flows. The screenshots below represent all the screens of our prototype, and the green boxes indicate clickable elements, which allow the user to transition between screens. The simple task flows from Screen 1 → 2 → 3. The medium task flows from Screen 4 → 5 → 6. The complex task flows from Screen 4 → 7 → 8.



Screen 1 **Screen 2** **Screen 3** **Screen 4**



Screen 5 **Screen 6** **Screen 7** **Screen 8**

METHOD

Participants

Our three participants were from Stanford. One was a Student Supervisor for Stanford and the other two were students. They were recruited by simply asking if they would like to participate and were compensated with cookies. All three participants were in their twenties. As consumers who are money-conscious and eat out regularly, these three users represent a sweet spot in our user base.

Environment

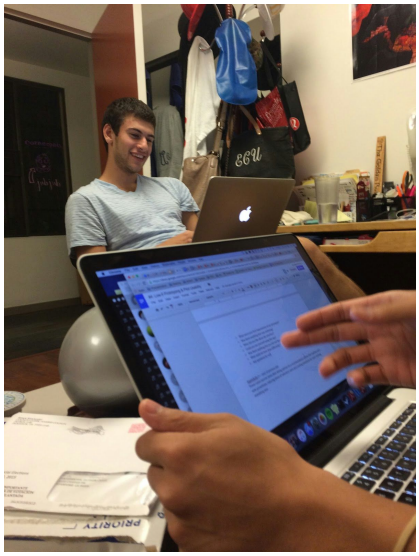
Because our app is meant to be efficient and usable in all settings, we had no constraints on where we performed the tasks. Participant 1 was interviewed at his place of work because that was where he was recruited. He used his desktop computer to access the prototype on POP. Participants 2 and 3 were interviewed in their rooms and used a phone to interact with the prototype. To set up the testing environment, we told participants to talk out loud, stream of conscious style, and to focus more on their experience than specific details of the design. This allowed us to learn what they liked or did not like about the interface and what was easy or difficult to use.

Tasks

Our three tasks corresponded directly with our UI Storyboards. In accordance with our simple task, the user must view and then claim a coupon from a list of businesses within a certain distance of them. For the medium task, the user must navigate their personal profile to view their dining analytics and then look at one graph in detail. Lastly, for the complex task, the user must simply locate their personalized eating recommendations, view a promotion, and choose whether or not to claim it.

Procedure

For each experiment, there were two team members present. The user was instructed to use the POP application from their own device to access the prototype. Before receiving the test, one of the team members read a script (see Appendix D) that explains the app and the user's involvement in the experiment. The user was then given general instructions without cues on which buttons to press (i.e. claim the promotion, go to your personal profile, etc.) to complete the three tasks. After completing the tasks, the user was then debriefed on their experience.

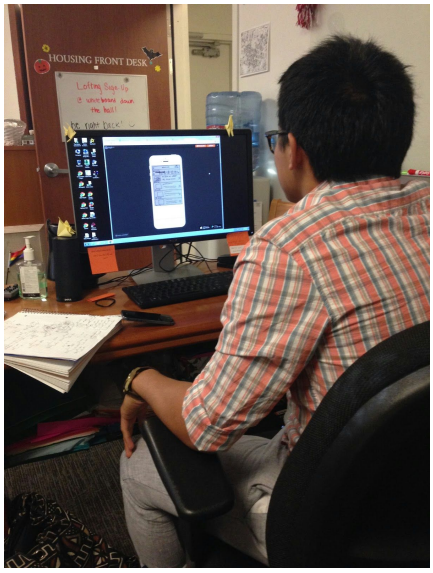


Test Measures

Rather than making assumptions on problem areas before we began testing, we wanted to wait to see which issues the users naturally ran into, where they were encountered, and how severe the issues were. For all user issues that arise, we will assign them a severity rating on the scale found in Appendix A.

RESULTS

Participant 1

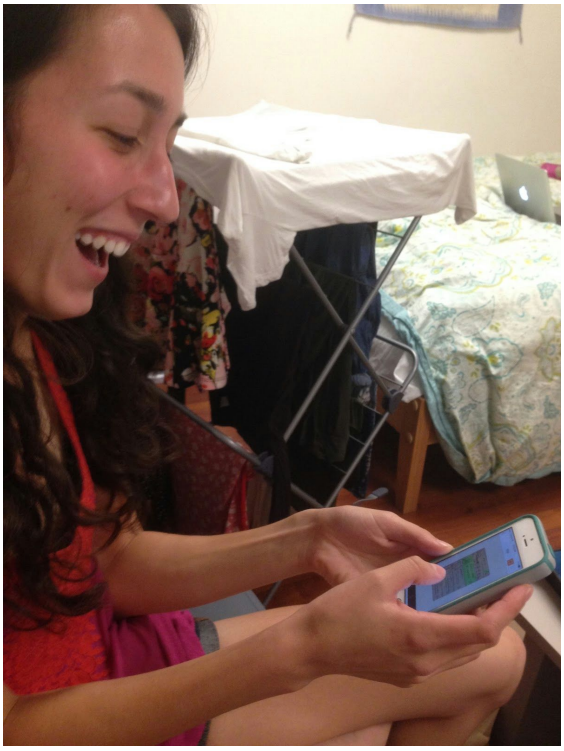


Participant 1 is a 26 year old, Filipino-American male who is the Student Supervisor at one of the housing front desks here at Stanford. He eats out only on weekends and special nights, typically spending only $60 per week and $20 per meal. He stated that when he does eat out, he tends to only go to sit-down restaurants rather than cheap, fast-food. Participant 1 did not face any difficulty in navigating the app. He commented that the entire experience was very intuitive. The only step that took notably longer than the others was when he was asked to set the distance for how far he was willing to travel for a dining promotion. However, this delay was only momentary and he found the distance slider without any assistance. Afterward, he commented that he liked how the list was sorted by distance. For the second and third task, he experienced no issues and really enjoyed that he had a personal profile with many features.

Participant 2

Participant 2 is a 21 year old, Indian male who is a student at Stanford. He typically eats out around 3-4 times a week and spends about $15 per meal. He stated that he would be willing to use the app when trying to decide where to eat, but would not be swayed by the app if he already had a place in mind. Through the simple task, Participant 2 easily navigated through the screens. His only note was that it would be helpful to put the exact time of expiration next to the "Expires in x hours" label to make it more concrete. On the moderate task, he was hesitant to navigate to the "Activity" tab when we asked for statistics, which pointed out some confusing wording in our script. We asked users to navigate to their statistics, but that term is not immediately equatable with "Activity." As a result, we made sure to use the term "activity" with our final participant. Next, when we asked Participant 2 to take a closer look at the pie visualization, he tried to pinch instead of tapping the graph. This interaction illustrated that we would need to be careful with our visual presentation of the graphs and make it obvious that they were clickable. For the complex task, he had no problem navigating to his personal recommendations and checking them out. During the debriefing, he complimented the general feel, but also noted that some screens presented too much information all at once. He recommended that we keep it simpler and easier to manage and expressed eagerness to try a real version of the app.

Participant 3



Participant 3 is a 22 year old, Caucasian female who is a student and RA at Stanford. She typically eats out two times a week and spends about $10 per meal. While she does not eat out as often as our previous two participants, she still represents a significant section of our target users. For the simple task, Participant 3 was able to complete the first task quite easily and liked the use of the slider to determine location radius. For the moderate task, she had a little trouble initially navigating to the user profile section of the app. She noted that the profile icon was a little small and out of the way and recommended making it larger and more prominent. However, once she found the profile section, she easily navigated to the "Activity" tab and the graphs and expressed that she really appreciated the idea of the activity page because she likes graphs. For the complex task, she hesitated when told to navigate to her recommendations as it was unclear which tab might lead there, but she eventually found the "Recs" tab on the far left. Overall, she expressed general satisfaction with the app and said that she found it pretty easy to navigate.

DISCUSSION

We extracted several key findings from our process data, and synthesized these into three themes:

1. UI and user-flow intuitiveness
2. quantity of screen content
3. extent of personalization.

While our testers were able to navigate the interface unassisted, we noted instances when the users hesitated while completing the tasks or did not take the most direct route through the screen workflow. For example, Participant 1 took a few seconds before he figured out how to use our UI slider mechanism to set his location radius for promotions. In the future we plan to redesign the feature that sets the distance radius potentially moving towards a map and pin interface. Participant 1 also commented that he appreciated how our end-screen sorted the promotions by location. Another participant had difficulty figuring out how to use the graph visualizations that one of our screens displayed. Our intention was that users could zoom-in on the details of a particular pie-chart by tapping the screen. However, our user tried to pinch the screen. Although our user was able to figure out the intended gesture to access the next screen, we know that we need to revisit our gesture-to-action mapping, and throw out any previous assumptions as to what we think is most intuitive.

We also identified content quantity as an interface component that we would like to continue improving. We noticed that our testers paused on some screens or made subtle indications of their approval or confusion. We tracked their eye-movements and realized that they were spending a significant proportion of time parsing content on the page. One of our next steps is to evaluate the information that each screen displays, and check how much of that content contributes to the purpose or task that screen aims to achieve. We want to streamline our screens and remove any unnecessary content or features. This exercise will likely result in a more elegant series of displays and a better user experience.

We learned that our testers had different opinions on the customizable component of Munch. All of our users gave positive responses to the existence of the profile screen, but they differed in regard to the type and extent of personalized content on the screen. We measured this

by taking note of the proportion of time users spent on each screen. One user visited the personal analytics screen and immediately exited, seemingly not that interested in the feature. Another user spent the most amount of time on this screen, lingering on the enlarged details of the graphs, and even exclaiming how much she loves graphs.

While our design goal was to create a very simple and clean interface, some users found there to be too much content or ambiguous icons. We will continue to iterate, focusing on the clarity of our icons and making our transitions intuitive, keeping in mind our commitment to conciseness and simplicity.

Report Word Count: 2500 (right on the dot. we try)

APPENDICES

Appendix A: User Testing Results

Severity Rating Scale:

0 = I don't agree that this is a usability problem at all

1 = Cosmetic problem only: need not be fixed unless extra time is available on project

2 = Minor usability problem: fixing this should be given low priority

3 = Major usability problem: important to fix, so should be given high priority

4 = Usability catastrophe: imperative to fix this before product can be released

Task	Problem	Severity	Possible Fix
1	Difficulty setting the distance	2	Make the use of the slider more clear or try implementing a draggable map.
2	Attempted to pinch instead of click to enlarge graph	3	Change how the graph is displayed to make it more obvious that the user should tap
2	"Activity" term is not intuitive	0	Ambiguity in the script
2, 3	User Profile icon not clear	1	Add a preliminary navigation tutorial or make the icon more obvious

3	"Recs" icon not clear	1	Change "Recs" icon
All	Too much information on some screens	3	Reduce the amount of information per screen/split into multiple screens

Appendix B: Original Tasks

Level	**Task**
Simple (common or introductory)	Consumers find restaurants nearby offering flash promotions.
Medium	Restaurant owners get more customers by offering a flash promotion
Complex (infrequent or for power customers)	Restaurant owners track supply/demand trends more accurately, and can predict how much food to order, effectively reducing waste.

Appendix C: Confidentiality Consent Form

Confidentiality Consent Form

Munch is an application being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Munch. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Adam Ginzberg, Hailey Spelman, Alex Tran, or Victoria Wee) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University

650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the Munch experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____

Participant Number _____

Date _____

Signature_____

Witness name _____

Witness signature_____

Appendix D: Test Script for Experiment

Test Script

Introduction

- Thank you for your participation. Today we are testing the interface of Munch - a prototype for an app that we have been working on this quarter for a class project. Munch revolutionizes how people engage with their dining experiences. Through instant, location-based promotions, Munch notifies people like you of offers and discounts for nearby eateries. For example, next time you are in Palo Alto you might get 10% off your order at Oren's by claiming and redeeming an offer.

Confidentiality

- Your participation in this experiment is completely confidential; no identifying information will be made available beyond our class studio. We have a simple consent form for you to read and sign.

Procedure

- You will be presented a very simple prototype. Your job is to interact with the interface to complete 3 main tasks. Please say aloud what you are doing and what you think your actions will accomplish.
- The first task is to claim a promotion:
    - Set the distance you're willing to travel for your dining option (pretend, the slider is not actually interactive)
    - Let's say you'd like to eat pizza tonight, so you are going to click on the Pizza My Heart promotion
    - Claim the promotion
- Great! The second task is to view your eating activity:
    - Go to your personal profile
    - Check out statistics about your buying and eating habits!
    - Zoom in on the pie visualization
- Awesome! The third task is to check out your personal recommendations:
    - First, go back to your profile
    - Now navigate to your personalized eating recommendations
    - Click on one of the promotions
    - Accept or reject the promo
- Give them a cookie for a job well done

Debrief

- Thank you so much for your help. We would like to finish with some general questions about your experience:
    - Demographics:
        - Name, age, occupation
        - How often do you eat out?
        - How much money do you spend on eating out?
    - What were your first impressions of our prototype?
    - Was there anything that was confusing?
    - What did you like about the interface?
    - Could you see yourself using this app?
    - Was there anything that you did not like about the interface?
    - What could we have done differently?
    - Any questions for us?