Low-Fidelity Prototyping & Usability Testing

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Online Version: http://bit.ly/3b0JgD

Introduction & Mission Statement

Fitter is a mobile application that helps people share what they eat to promote healthy dietary decisions. Fitter's users post short updates sharing what they eat and, optionally, preparation details. This information then becomes visible to the given user's subscribers. Users receive feedback on their posts, reinforcing a healthy diet. Fitter is optimized for quick and easy use on mobile devices with small screens. To test our current design, we created a low-fidelity prototype which mimics how Fitter would function with Apple's iPhone. We then tested this low-fidelity prototype with members of Fitter's intended user group in order to refine and improve the design of Fitter's user interface.

Fitter's mission is "to create a mobile application that promotes healthy lifestyles through the sharing of dietary practices."
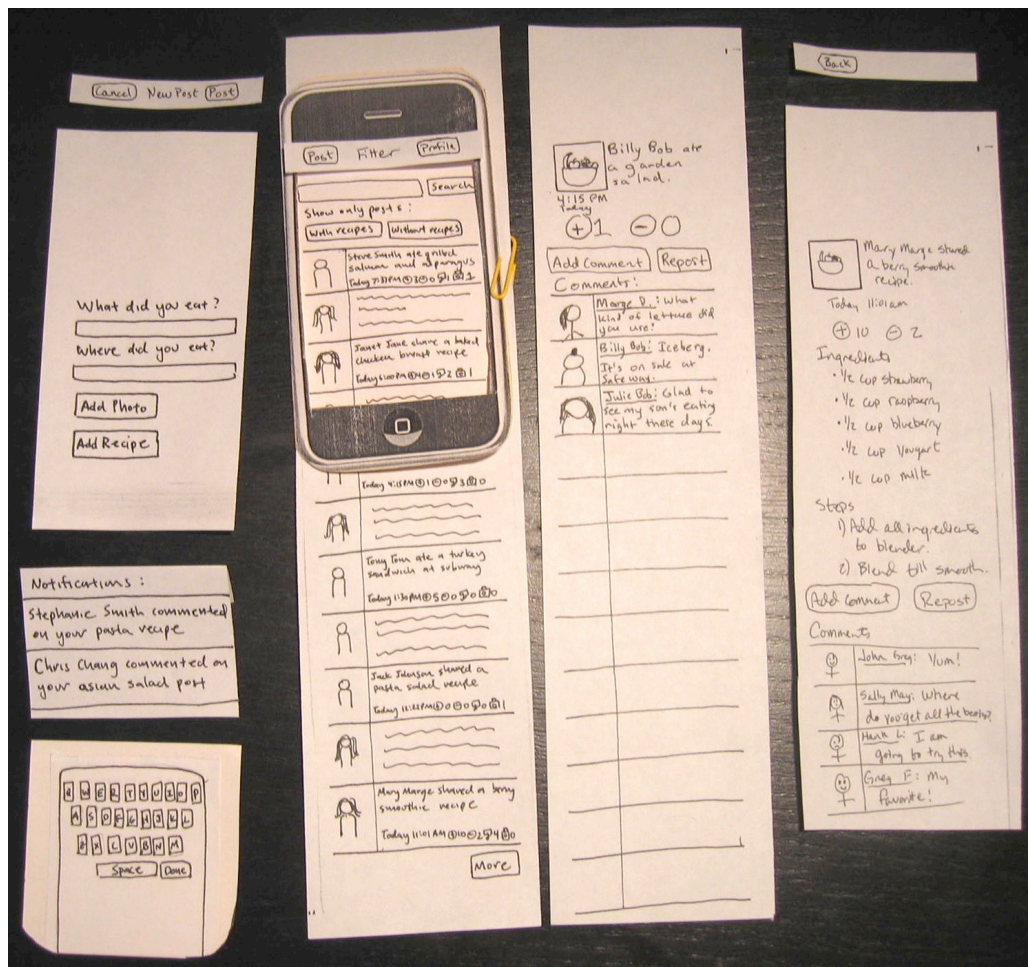
Low-Fidelity Prototype

Figure 1. Low-fidelity prototype components.

Since Fitter is designed for Apple's iPhone we found it prudent to create a blinder, which emulates the iPhone's size, screen area, and existing user input hardware (e.g. the device's one button and touch-sensitive screen). We then designed our screens to work with this blinder and with additional length to hint at their scrolling capabilities. Fitter's most important screen is its main feed (Figure A. 1) which shows recent posts from the users a person subscribes to and is filterable to show only posts containing recipes and those without recipes (Figure A. 2 and Figure A. 3, respectively). Second in importance is the post entry screen (Figure A. 4), which allows users to share what they are eating with their subscribers. Finally, Fitter's expandable feedback notifications box on the main feed screen (Figure A. 6) allows users to immediately jump to new feedback on their posts.

Fitter's main feed is designed to be the screen used to make initial decisions about what to prepare or eat. It is filterable and searchable so that when someone uses the search or filtering functionality at the top of the screen, the feed will be adjusted accordingly to display the resulting posts. When a user clicks on a post on the main feed screen, s/he is taken to a more detailed screen where s/he can view feedback on the post and, if available, recipe information (see Figure A. 5 for an example). The user can "like" or "dislike" a post and also leave a text comment on the post from this screen. To add a post, the user clicks the "Post" button from the main feed screen (on the left side of the screen's title bar) and is taken to the post entry screen to add details about what s/he is eating. If the user desires to add recipe information, s/he clicks the "Add Recipe" button and the screen expands at the bottom to include modifiable sections for "Ingredients" and preparation "Steps". If the user wants to view or edit his/her profile s/he clicks the "Profile" button (on the right side of the main feed screen's title bar) and is taken to the profile screen.

To operate the prototype, the user holds the blinder with the current screen in one hand while using the other hand's fingers to scroll or click by moving or pressing the touch-sensitive screen. The user can exit the application at any time by pressing the button on the bottom of the blinder; however, this action does not log the user out. Instead it saves the current state and screen of the application for when the user returns.

Method

Participants

For our usability tests we found participants that wanted new ideas or improvements in their current eating habits, as well as trying to keep it healthy and nutritious. All three of our participants either owned a smartphone or were familiar with the functionality of an iPhone. This ensured that when presented with our interface and design, it would not be completely foreign to them and they could catch on fairly easily after a brief demonstration. Our first and second participants were graduates from the University of Washington. Currently living in Ballard, they

are often times at a loss for what to eat, often times sticking to simple, mundane pattern of eating. The third participant is a current full-time student, living closer to a college campus. His diet consists of a mix between cooking at home and eating out at various places located around campus.

Environment

The testing was conducted in the comfort of one of the participant's house. We decided to have the participants stay in their own environment instead of asking them to come out to ours. This also minimized their hassle and made them more inclined to agree to do the testing. All three participants agreed to meet there where we found a large, secluded table to conduct the tests. To ensure that each participant didn't have any previous knowledge of the procedure, they were asked to step away whenever it was not their turn.

Figure 2. A participant scrolling through a feed.

Figure 3. A participant adding a comment to a post.

Task

Each person was asked to complete a total of three tasks. The tasks were set-up in a way that put them in a real life scenario and gave them a problem or job that they had to solve. The first task asked them to use the app to find suggestions for what to eat for lunch, given they were at an office environment. For second task, they were given a food item and needed to find a recipe that uses the item. The final task forced the participant to input a recipe they had recently made and wanted to share with others.

Procedure

At the start of each test, the participant was greeted by all the group members and was then given the details of the test. They were given the consent for to sign and assured that all data was to remain anonymous. We emphasized that the design not the participant was being tested. The participant received a quick explanation of Fitter and demonstration of how to navigate through the app. After all questions were answered, they were presented with three different tasks, one at a time. While the participant was completing the given task, the facilitator encouraged the participant to explain their thought process and answered only clarifying questions.

Each group member was present during the testing. Aaron was the facilitator, welcoming the participants, and giving a brief introduction to our product along with a short overview. Joe was the note taker, recording problems, difficulties, likes, etc of the participants. David was the computer, switching out the screen after the participant interacted with the app. After each participant, there was a brief regrouping between the group members to get organized for the next participant and quickly discuss the test that had just completed.

Test Measures

When the participants were going through each task, we were taking note of what method they were using to accomplish the task (if that was relevant), any difficulties they had in knowing how to accomplish the task, or if they wanted to do something that wasn't implemented in our current design. We made sure to track down what functions they said they would have liked to have, what things they liked currently, and at times certain things that they thought could be improved. Another important aspect was if there were any patterns in the actions they did such as entering text, so we could use that to standardize our text input screen and format.

Results

Our three tasks for usability testing intended to test Fitter's important user interaction features. The first and second tasks focused on how features of Fitter's main feed screen and user-created feedback are used to obtain suggestions about what to eat. However, the first task was designed to test if users would browse the feed or immediately jump to search for suggestions while the second task was designed to test how users would take advantage of the feed's ability to be searched and filtered to obtain suggestions. The third task focused on Fitter's method of data collection for sharing recently consumed meals which involved recipe information.

To complete the first task, we observed two of three participants browse the main feed to discover food ideas. Some of the participants also used the positive/negative counts and comments on posts to make a final decision. The minimal content of the non-recipe posts disappointed one of our participants, causing him to incremented the negative count on the posts.

One of our testers initially confused the main screen for a list of friends, something which he exclaimed would be more apparent if there was more content and less scribbles in the posts in our prototype's main feed screen.

All three participants used the search functionality to complete the second task. One of the participants then filtered the search results to show only posts containing recipes. All of the participants left feedback on the recipes they eventually chose: two left comments about the recipe, one left a comment about an earlier comment. One of the participants requested the ability to bookmark a post to save it for the future.

While performing the third task, the participants became fatigued with Fitter's "line-by-line" style of input for adding the ingredients and preparation steps of a recipe. All three tried to input all ingredients in one text box and all steps in another. Additionally, all of the participants were confused with what to enter into the 'Where did you eat?' field on the post entry screen. One decided to leave it blank, while the other two entered a location synonymous with "Home". Two of the participants used the 'Add Photo' functionality to snap a photo of the meal they had prepared and attach it to the post. The ability to take a photo on the fly and the thumbnail-size display which confirmed that the photo had been successfully attached pleased our testers. Finally, one of the participants asked how he could edit his recipe after posting it, something we do not currently have functionality for.

Discussion

The results of our testing confirmed many of our initial thoughts regarding how users would make decisions with the application. Given the choice of an information-containing feed versus the ability to search for food suggestions, most participants chose to browse the existing feed content unless they had a very good idea of what they wanted to eat. This result confirms the main feed's usefulness in helping make initial decisions. By providing the ability to create feedback on posts and some sample feedback for testing, we learned that our feedback mechanisms are valuable to our users when narrowing down their initial decisions further.

The testers' use of the search functionality when given an item to eat confirmed that it was visible enough and the results were simple enough to make it useful. However, after one user searched for "restaurants near here" and received no results, we realized we need to add background text into the search text box to indicate that the search operates in a keyword-wise fashion.

We were disappointed that only one of our testers used the feed's filtering functionality to narrow down content and make decisions more quickly. We also were disappointed that we had not considered how a user could view his/her posts and bookmark posts for later viewing. To correct this, we will add the ability to let users bookmark a post by clicking an 'Add to Favorites' button

on the post detail screen (such as the one in Figure A.5). We will also add a second row containing two feed-filtering buttons to the main feed screen so that the user can view only his/her 'Favorites' and posts. This second row of filtering buttons should increase the visibility of the feed's filtering functionality.

Tedious recipe information input was of major concern with our testers. Since they did not enjoy having to enter each ingredient and preparation step one-by-one and outright stated that they would prefer to just have a large text area which they could input this information in any style they pleased, we plan to appease their demand and change our input interface accordingly. This will change the display of the post entry screen after the user has pressed 'Add Recipe' so that s/he will push the 'Add' button once for the Ingredients section and the 'Add' button once for the Steps section. After text is inputted, the 'Add' buttons in those sections will become 'Edit' buttons which the user can click to update the recipe. Furthermore, if a user wishes to edit one of his/her posts, s/he can view the post, press an 'Edit' button which will be in place of the 'Add to Favorites' button and be taken to the post entry screen with all its sections properly populated with the user's most recently added content. Finally, to reduce the confusion regarding what to enter into the 'Where did you eat?' field of the post entry screen, we plan to utilize a magical system of location recognition which will determine where you currently are (e.g. name of a restaurant, your home, etc.) and pre-populate the field accordingly. If the location is incorrect, you can change it using the standard iPhone keyboard.

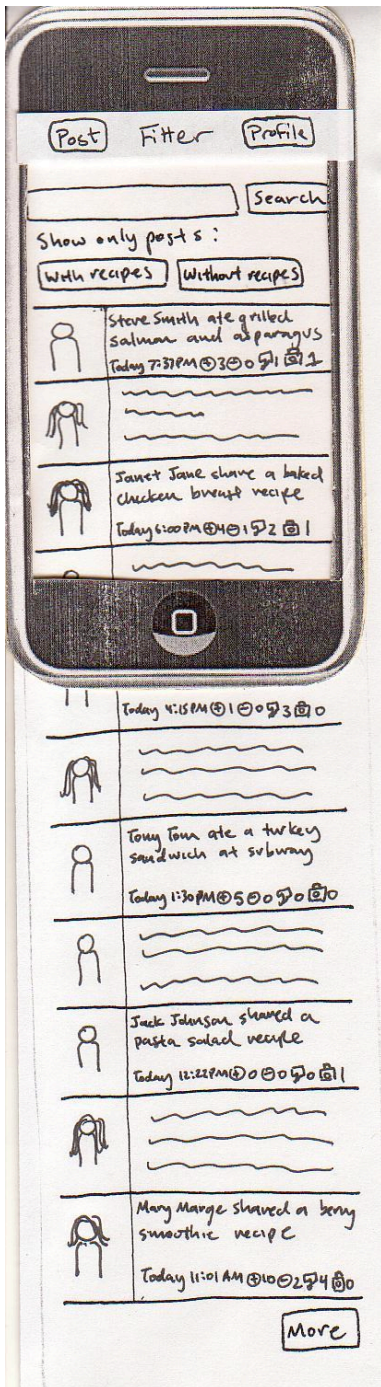# Appendix

A. Low-Fidelity Prototype Screens

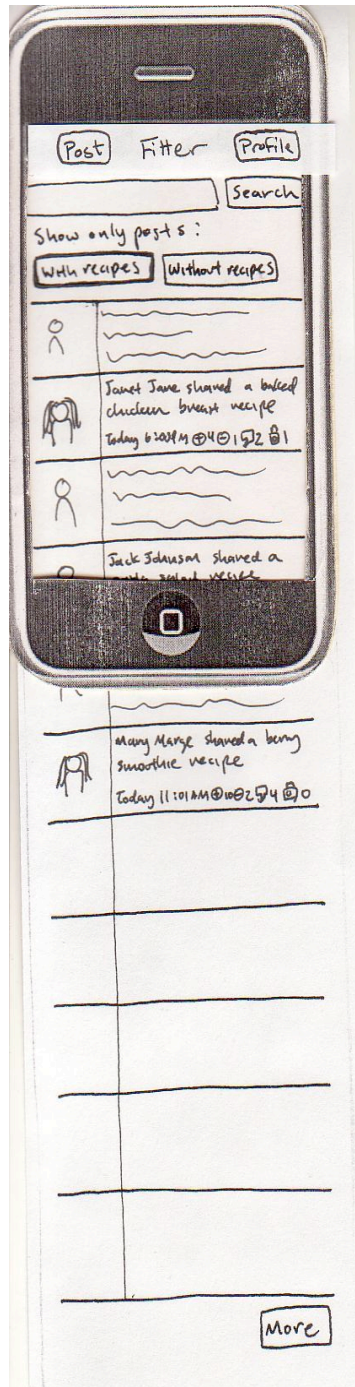**Figure A. 1**. Main feed screen

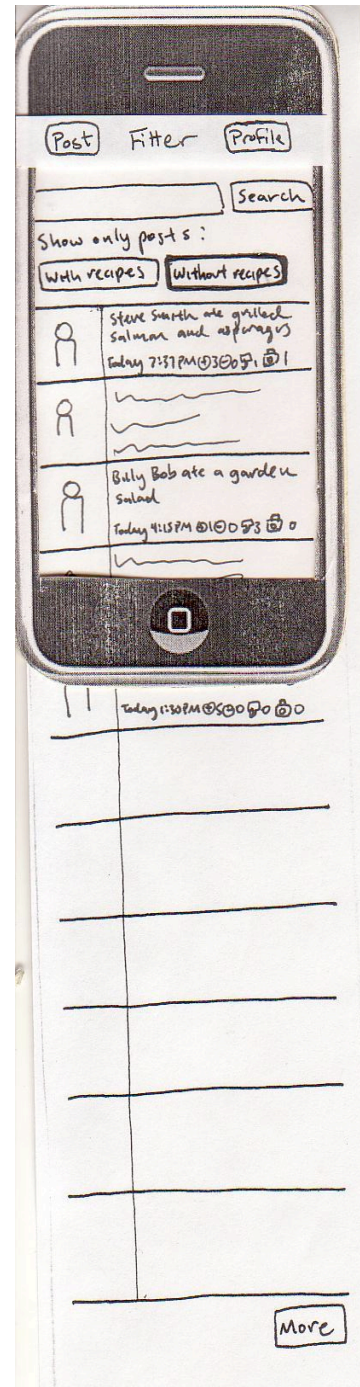**Figure A. 2**. Main feed screen filtered by posts containing recipes.

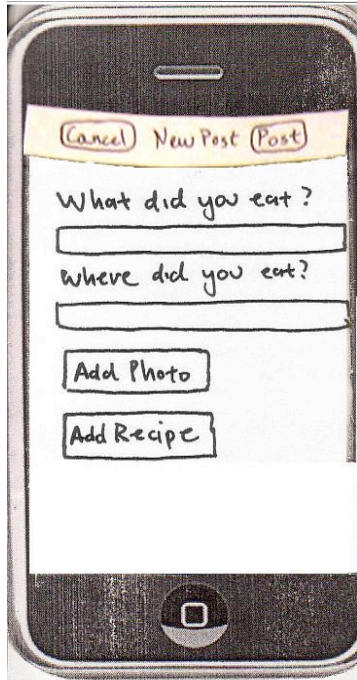**Figure A. 3**. Main feed screen filtered by posts without recipes.
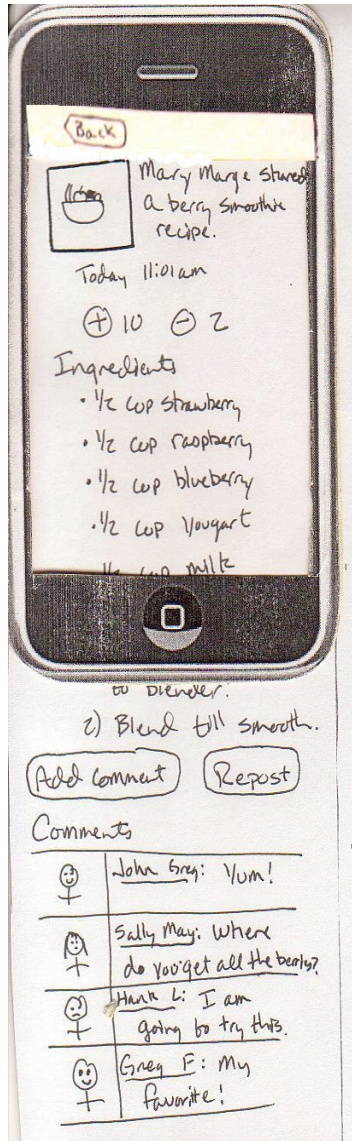
Figure A. 4. Post entry screen

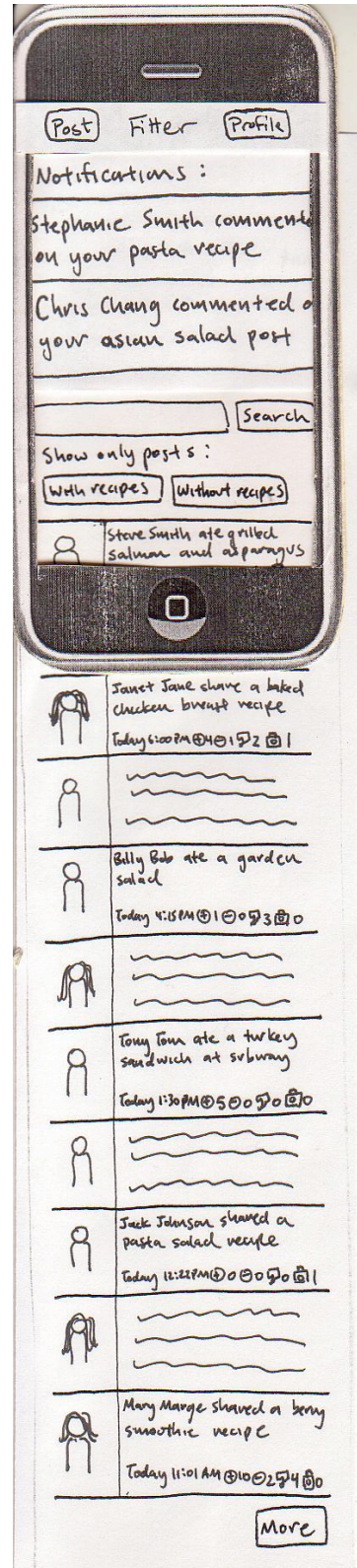**Figure A. 5**. Post containing recipe information

Figure A. 6. Notifications of feedback on posts

B. Testing Notes

Note	Participant	Severity
Wants ability to edit posts after they have been posted	1	3
Wants to add all ingredients or steps at once not one at a time	1,2,3	3
Believed location field on posts unclear	1,2,3	3
Wants ability to save recipes to easily find them	2	2
Wants ability to comment on comments	2	0
Wants ability to search for types of food (ie Mexican)	3	0
Thinks feed looks like a list of friends at quick glance	2	0
Believed non recipe posts do not have much information	1	0
Wants more of Yelp/Urbanspoon functionality (ie finding restaurants)	3	0
Did not use the filter buttons	1,2	0
Uses rating system to guide choice for what to eat	1,2	0
Added comments	1,2,3	0
Added photos	2,3	0

C. Tasks

Task 1

It will soon be lunch time. You are at work and forgot to bring your lunch today. Most of the people you work with go out to lunch nearby, but you cannot find anyone to go with. Turn to Fitter to find suggestions for lunch.

Task 2

Steak was on sale at the grocery store yesterday, so you bought some. You realize today that you need to eat it but no recipes come to mind. Turn to Fitter to find some tasty steak recipes.

Task 3

You just made a new recipe for spaghetti and it was delicious! You would like to share this simple, tasty recipe with your followers on Fitter. Here is the recipe info:

Spaghetti and Sausage

Ingredients:

  ½ lb spaghetti

  2 cups pasta sauce

  1 lb Italian sausage

Steps:

  Boil water, cook spaghetti

  Brown sausage

  Add sauce to sausage and simmer

  Add sauce to cooked spaghetti

Fitter Consent Form

The Fitter application is being produced as part of the coursework for the University of Washington Computer Science course "CSE 440: Introducton to Human-Computer Interaction". Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Fitter. 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 (David Bai, Aaron Miller, Joseph Muhm) or with Professor James Fogarty, the instructor of CSE 440:

James A. Fogarty
Computer Science & Engineering
University of Washington
206-685-8081
jfogarty at cs.washington.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 researchers and their supervisors.

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 usage and opinions in relation to the Fitter experiment. I understand I may withdraw my permission at any time

Name _____

Date _____

Signature_____

Witness name _____

Witness signature_____