Project Part 6: Evaluation Plan

Homing Real Estate Search Mobile App

Christopher McLaughlin, Michael Peters, Samuel Pettinichi, Alex Samuel, & Eric Walters.
Electrical Engineering and Computer Science
Oregon State University
Corvallis, Oregon, United States of America

***Abstract*—In this article we present our evaluation plan for an analytical and empirical evaluation of a prototype of our real estate search app. For our analytical evaluation, we will use a Nielsen's heuristics approach to evaluate our user interface (UI). The empirical evaluation will include the observation of a prospective home buyer who matches the likely demographics of users who we anticipate will use the mobile app. The user will be observed as they search for and filter potential housing options and add a house to their "Favorites" list.**

I. Introduction

We plan on completing the analytical evaluation first because that will give us the opportunity to point out and fix easy to spot deficiencies in the user interface (UI) before having an actual user test it. The empirical evaluation will then be able to focus on locating less apparent problems.

II. Analytical Evaluation

For the analytical evaluation we will be using Nielsen's heuristics to evaluate our UI. This will allow us to find areas in our Homing App that need improving. These improvements will enhance the overall user experience.

A. The Exact Tasks We Intend to Evaluate

The 6 areas of our application we will focus our heuristic evaluation are as follows:

- Searching for a house.
- Applying primary search filter "bedrooms/bathrooms" to narrow results.
- Using map boundary tool.
- Applying secondary search filter for crime statistics to narrow search.
- Selecting a specific house.
- Saving a house.

Two evaluators will perform the following heuristic evaluation separately and record their findings. We are prepared to perform the heuristic evaluation from the coursework we have so far completed in this class. While doing the evaluation, we will keep the mindset of the target user of our app so that way we can fully address all concerns and things users would like to see in the app itself. The evaluators will report their findings via Google Docs for the entire group to review. When agreed upon and the results merit, small changes will be made to UI. Our goal is to have our prototype address the concerns that the class brought up in the Piazza review to ensure that those concerns are properly addressed. Those concerns include not understanding what to do on the map boundary screen, as well as how to properly use the filters. As a group we will discuss the evaluation which the two members performed; then find ways to address the concerns brought up by the evaluations as well as on Piazza. When our analytical and empirical data both find a coinciding issue, then a major change will be made. Then we shall ensure that we have resolved any issues which have been brought to our attention.

Using Nielsen's heuristics, we will be asking ourselves the following questions:

- **Visibility of system status:** Is the user being informed and updated about what is going on?
- **Match between system and the real world:** Is the application free of jargon, difficult, and confusing words? Is information provided in a logical order?
- **User control and freedom:** Does the UI support redo, undo, and exit when necessary?
- **Consistency and standards:** Does the application use the same words for the performing the same operations throughout the entire process?
- **Error prevention:** Are there possible areas where errors can occur? How can these errors be eliminated or prevented?
- **Recognition rather than recall:** Where can visual options be used to help reduce the user's memory load? Are system instructions available and easily accessible for appropriate actions?
- **Flexibility and efficiency of use:** Does the application cater to both experienced and novice users? Can users tailor frequent actions?
- **Aesthetic and minimalist design:** Is only relevant information presented to the user?
- **Help users recognize, diagnose, and recover from errors:** If an error does occur, is the user notified (in plain language) of exactly what happened? Is the user

given instructions on how to recover from or fix this error?

- **Help and documentation:** Can the application be used without help documentation? If not, are concrete steps to be carried out provided?

III. Empirical Evaluation

We are going to be using a medium-fidelity prototype built with myBalsamiq for our usability study. We selected this particular prototype because we felt it would be a less distracting experience for the user during the study compared to using a paper prototype since the evaluator does not need to hover right next to the user in order to move pages around. In addition, as evaluators we can focus our attention on recording data and asking appropriate follow up questions rather than worrying about manually changing what appears to the user. We want to specifically find out how users are actually going to interact with our mobile app. By asking the user to think-aloud during the study, we should be able to observe and record UI problems that our analytical study missed. Since this user will be using this prototype for the first time, we hope to gain insights on how we can improve our UI with respect to learnability as well as utility.

A. The Particular User We Are Evaluating

We are going to evaluate a middle-age (25-40) female who is currently searching to purchase a house. This user also has an average comfortability with technology and mobile apps. We felt this particular user would be suitable to evaluate because she is within the age range of the users that we expect to use the application. In addition, her level of sophistication with respect to technology matches that of our likely users. Our likely users are adult individuals who have saved enough money to begin looking for a house. In addition, they are not so old that they are unfamiliar with mobile technology. We feel that individuals between 25-40 years of age would fit both of these criteria and would therefore likely be the age range of most of our users.

B. The Exact Tasks We Intend to Evaluate

The overall use case that we want our user to complete for the empirical evaluation is to use the mobile app to locate a house which meets certain criteria and add that house to their "Favorites" list. This task can be broken down into several sub steps that we will closely observe. First the user must search for a house by entering a location on the home screen. Then the user will need to apply a primary search filter to narrow the results. One example of such a filter is to select the number of bedroom/bathrooms that should be in the home. The next step for the user is to use the Map Boundary Tool to draw a specific neighborhood boundary within which the house should be located. Finally, the user should apply a secondary search filter (crime statistics) to further narrow the search. The user will then need to select a specific house from the list of search results and finally save the house to their "Favorites" list. These are the most useful tasks for empirical evaluation purposes because they constitute the most likely tasks that users will complete using our system. Since regular users will likely complete these tasks over and over again, any insights we can gain into improvements to our user interface will be extremely valuable.

C. The Data We Will Be Collecting.

During the study, we will record the user with audio and make written recordings of their interaction with each screen. The audio will pick up all of the relevant audible information that the user conveys during the study. We will closely monitor the user during the study so we can keep a detailed document about the non-verbal interactions that took place during the study. We feel that this will cover all of the bases because we need to make sure we account for users who may be less vocal than others.

D. How the Data Relates to What We Are Trying to Find Out

The audio will help us identify any usability issues because the user will vocalize their concerns if a certain aspect of the interface is confusing. We can dissect what the users concerns are regarding the interface and determine if modifications are necessary based on their feedback. If the user is more vocal, it may tell us that we have some learnability issues that need to be addressed in order for people to start using the application on their own. The written recordings of the user's actions will also help us determine where users may run into difficulties. If we record that the user spent an unusual amount of time on one screen it may tell us that the interface of that page needs to be addressed. The ideal situation is to record these observations and couple them with the audio in order to reach the root of the problem. Once we have the audio and the written recordings, we will have all of the tools necessary to make UI changes.

The materials we will use in our empirical evaluation are included on the following pages and include strategies, follow up questions, and our prototype.

Strategies:

Strategy 1:

In order to assist our group in finding problems in our UI, we have created a list of expected actions that the user should complete during our empirical evaluation to perform our assigned task of searching for a home, filtering results, and adding it to their Favorites.

Empirical Evaluation: Expected User Actions

1. User clicks on central icon at splash screen to simulate end-of-loading time.
2. User views search results and clicks on primary search filters
3. User views dropdown menu and selects bedrooms and bathrooms
4. User views options and clicks on bedroom dropdown menu and chooses the #2
5. User selects bathroom dropdown menu and chooses the #2
6. User clicks on apply filter
7. User notices popup and clicks on crosshair icon to launch boundary tool
8. User clicks on help to learn how to use application; clicks on help again to hide text
9. User attempts to draw boundary (clicking on map draws one for them – myBalsamiq limitation)
10. User applies boundary by clicking on bottom button
11. User clicks on secondary search filters
12. User views dropdown menu and selects crime filter
13. User reads instructions and attempts to move slider
14. Clicking on slider automatically shifts slider up to a LOW Crime setting (myBalsamiq limitation)
15. User applies secondary crime filter by clicking on bottom button
16. User views new search results and chooses 1 of 2 houses by clicking on their pictures/text.
17. Doing so brings the user to the home details/information
18. User returns to last search results by clicking on return button at top of page
19. User selects the home that was not selected previously and views its details
20. User opens up options menu at bottom of page and notices that the house can be saved

Strategy 2:

In order to find unexpected issues involving our user's experience we plan to use interview questions that promote conversation/discussion. We've added follow-up questions that encourage the user to be detailed in their explanations of when and where they had a poor experience using our application. This will allow us to find problems we haven't thought of; and more importantly pinpoint their location to apply alterations/modifications accordingly.

Follow Up Questions:

Question 1:

Do you feel that you were successfully able to search for a home? Explain?

Question 2:

Was there a point in the process where you were confused about what to do OR where to proceed?

Follow Up Question 2.1:

If so, what point/s?

Question 3:

Did you feel that any pages in the application were too “busy”?

Follow Up Question 3.1:

If so, which page/s?

Question 4:

Did you find that any pages in the application were disorganized?

Follow Up Question 4.1:

If so, which page/s?

Question 4:

On a scale from (1-10), 1 being difficult and 10 being straightforward; please rate your experience applying the tasked primary and secondary filters.

Question 5:

If this application was realized; would you use it? Explain why/why not?