Assignment M4

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***Abstract*—The website Reddit has been a hub of internet activity since 2005. Recently it has become one of the top used mobile app in the world, with 47.8 million unique visitors in 2019. (Statista, 2021) The amount of content on Reddit is vast and often intractable for new users and veterans alike, especially on the mobile app. I am going to be investigating the search feature of the Reddit mobile app to improve ease of use and searchability within the Reddit community and its sub-communities.**

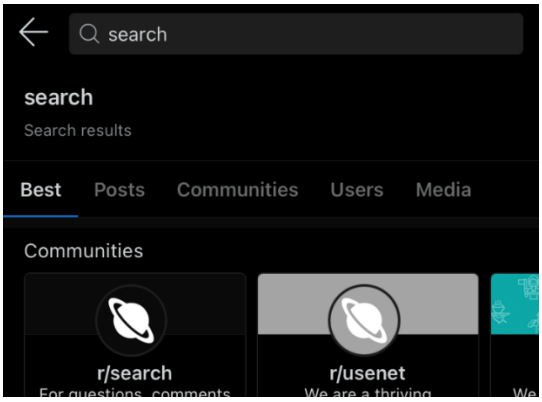

***Figure 1*—** Example of the mobile Reddit app search bar. Showing results for "search".

1 QUALITATIVE – INTERVIEWS – MAP PROTOTYPE

1.1 Evaluation Plan

I will be interviewing several friends and family members about the map prototype as proposed in my M3 (Appendix 5.3). The goal of this interface change is to allow the users of the mobile Reddit app to explore and find more subreddits to join. This evaluation will be held remotely, as most of my family and friends do not live in the area. This will either be over phone or on a Zoom call where I can screenshare the prototype, otherwise I will send the prototype to them before the interview. I will be taking notes during the interview to record any learnings from the interview.

1.2 Content of Evaluation

My interview will be semi-structured, leaning towards a more structured approach. Trying to have a conversation without *any* improvisation is daunting so I will allow myself and the participant some wiggle room to dive down rabbit holes that they want to explore. The questions that I will ask are as follows:

1. Can you remember a time when you found a new subreddit? Are you able to walk me through that process?
2. Have you picked up any hobbies recently?
    - Did you look at the subreddits for those hobbies?
    - Were those subreddits helpful?
    - Did they point to any other subreddits?
3. How often do you use Reddit to explore more subreddits?
4. Would you be interested in exploring Reddit through a feature like this?
5. What do you dislike about this proposed feature? What would you change if you could?
6. Do you have trouble finding new subreddits to be a part of?
7. What information about subreddits do you need before you join a subreddit?
8. How do you organize your subreddits?
9. Do you have multiple accounts on Redditt?
10. Can you talk to me a little bit about how you interact with Reddit?
    - Do you think that interaction is 'normal' within your subreddit?
    - What about subreddits that are related to this one?
11. How often do you visit the 'similar subreddits' on subreddits you are a part of?

1.3 Possible Data Inventory and Requirement Redefinition

This evaluation will serve two-fold for the data inventory/requirements. I went into this redesign to help improve the search feature of the Reddit mobile app. There are two main things that I have found users use the feature for: finding specific information/posts *and* finding new communities to join. These interviews are aimed at further defining the 'finding new communities' users and their goal/needs while also gathering feedback on the prototype of the Map Search. I will be furthering my understanding of their needs while at the same time getting initial feedback on whether this would meet those needs or not. The specific data inventory items that I think will be rounded out more are goals,

needs, tasks, subtasks, and context. By narrowing the scope, I am able to collect more information on these inventory items, which would set up an additional survey later on to better define the user group we are serving.

2 EMPERICAL – CONTROLLED SEARCHES – "PHONE" SEARCHES

In the empirical evaluation I will be testing the 'phone' search prototype as described in M3 (Appendix 5.4). The goal of this prototype is to improve the speed and ease of finding specific posts within the mobile Reddit app by changing the way search results are displayed (opening the 'best' option right away and swiping through results as opposed to a list). I will be comparing the 'phone' interface to the official mobile Reddit app.

2.1 Experimental Method

The experiment will be very similar to my participant observation exercise that I did during needfinding with some refinements. The first thing that I am going to do is find seven Reddit posts that have been on /r/all (the front page of Reddit) in the past week. I will then email these seven posts to the participants a week before they participate in the experiment. During the experiment I will describe the general idea of the post using ten words that I have pre-selected. The participant will then use either the Reddit mobile app or the new interface to try to find each of the posts.

This experiment will work better as a between-subject study because the week of wait time is essential to the experiment working. It was *extremely* hard to find post just based on the words, but I want to emulate the 'I have seen this post before, but not sure where' feeling that would prompt someone to find a specific post on Reddit. These two study groups (Reddit app and 'phone' interface) will be assigned randomly to the participants, and I will administer them randomly (to avoid me getting better at administration and then switching the interface).

I will be collecting five different metrics that I will then average and perform a student's t-test on the results to see if there is a statistically significant difference between the current mobile Reddit app and the new interface. These five metrics will be: time to find a specific post, number of 'clicks' needed, number of pages visited, number of restarts needed and if they do not find a post, the time until the participants quit searching.

- Null Hypothesis: the 'phone' interface is equally effective to find a specific Reddit post as the mobile Reddit app
- Alternative Hypothesis: the 'phone' interface is more or less effective to find a specific Reddit post as the mobile Reddit app
- Independent Variable: whether the user is using the 'phone' interface or the mobile Reddit app
- Dependent Variables: averages of time, clicks, pages, restarts and time until quit

Two of the dependent variables are similar but are different, average time vs. time until quitting. The average time will let us know which if the interfaces get users to the answer fastest, while the time to quit is a bit more nuanced. Time to quit gives us an idea of which interface is more frustrating to use because the interface that people continue to use, despite adversity, is the one that they are more comfortable with or find easier to navigate. This is my assumption around what the time until quitting would give us insight on, but if there were a difference in data, I would think that a needfinding exercise would be great here to find out *why* on one interface people quit earlier than the other.

Lurking variables are also an issue here, which is something that my slight redesign to the needfinding exercise is trying to help. The biggest lurking variable that I found in the needfinding I did was that I would basically just search whatever the clues were. I am showing the posts earlier (without telling the participants exactly why) so that I am just *reminding* them about the posts and not *describing* the posts. I am accounting for a lot of lurking variables with the random assignment of interface each participant will use, but I think it is also necessary to assess competence with Reddit so we can get an even distribution of novices and experts as well.

2.2 Analysis

Like I said, I will analyze this data using a student's t-test and will come away with five different metrics to determine which interface is 'better'. If all five of the metrics are statistically significantly different and all point to a specific interface, then the analysis is relatively easy, that is the better interface.

If not all of the metrics are statistically different or if they skew towards different interfaces (which is *far* more likely), it will then open an opportunity to delve

into more needfinding around which of the dependent variables is most important to our users. This could be done in a survey of a single question, but there are more effective ways to determine which of these is most important.

3 PREDICTIVE – GOMS MODEL – EXPANDED SEARCHES

For the predictive evaluation I am going to construct a GOMS model surrounding the expanded search prototype described in M3 (Appendix 5.2). This prototype is improving the way people can filter their searches and search in new ways, which is why expert users are going to be using it more than novices. I will be analyzing the options that these experts have when they are trying to find specific posts using the new features.

3.1 Tasks to Evaluate

I will be constructing a GOMS model by analyzing the task of finding a specific post. This 'post' is a bit fluid because there are a lot of different posts that people want to find, videos, images, and text threads to name a few. This will be the main selection criteria for the expert user – what kind of post they are looking for. Some of the operators are the new features that I describe in the prototype: Image Search, Body Search, Comment Search, Refined Search as well as the Same Interactions Search option. The rest of the operators are the features that are a post of the Reddit mobile app already: Trending Posts, Best, Communities and more.

I will be evaluating the interface as someone who is already familiar with the new interface and analyzing how they make decisions *within* that interface and not how they would learn to use the interface. The expert will also be looking into different posts, not just a single one. The types of posts will be varied, an answer to a question that the user has, an image that the user saw but cannot remember exactly, a comment thread on a post the user saw recently and a post about a topic the user is interested in, but not an expert in. By exploring all of the types of posts that this expert user would seek out the GOMS model will allow me to see if the proposed expanded search options would bog down the user with choice or if it will improve their experience.

4 PREPARING TO EXECUTE

My two choices are going to be the Qualitative Evaluation and the Predictive Evaluation because my 'phone' prototype is not ready for empirical testing. Just like the lectures pointed out, empirical evaluation often happens near the end of an interface development process, and we are not near that point at all. Empirical data analysis relies on a prototype that is capable enough to run experiments with and I do not have a working prototype of the 'phone' search model to test with users and gather the data that I would want to collect with the experiment.

Furthermore, I think that I can learn much more about the overall goals and needs of the users right now through the Qualitative Evaluation and the Predictive Evaluation because I am narrowing in on the subset of users I will focus on, these 'softer' analysis will recontextualize my prototypes and give me a great jumping off point for some more data driven evaluations later in the design process.

5 APPENDICES

5.1 Appendix 5.1: Data Inventory

5.1.1 *Who are the users?*

From the survey, we can see that we are dealing with the correct audience, mostly younger internet users. One interesting bit of data about the users is that we are also going to be designing more for the inexperienced users – more of the experts in Reddit use an unofficial app as you can see from Figure 2.

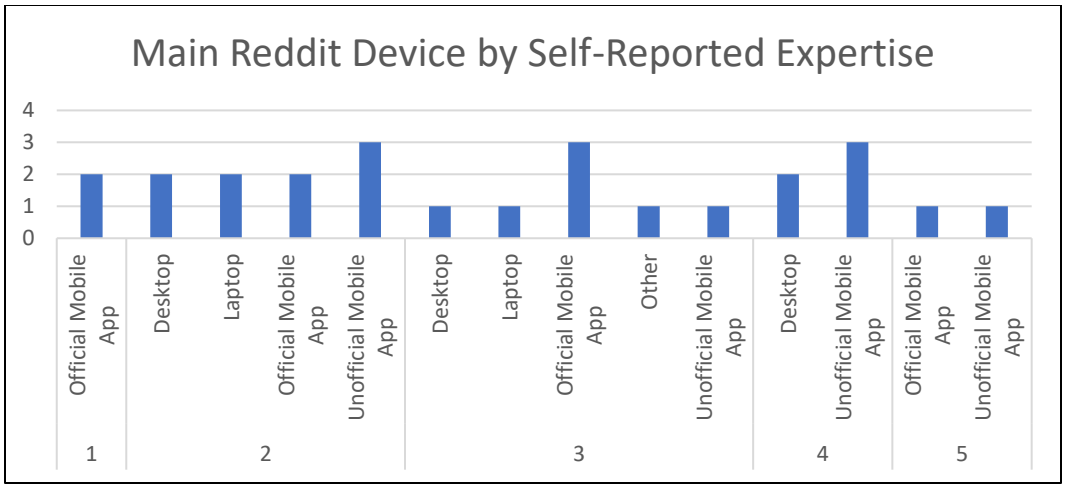

Figure 2 — Main Reddit Device by Self-Reported Expertise. Expertise is ranked from 1-5 where 1 is the least expert and 5 is the most expert.

I think this is due to new users getting introduced to Reddit will naturally go to the Official app and then as they get more experience, they will try out other apps. We want to make sure these new users can find what they want to find.

5.1.2 *Where are the users?*

From the survey we also get a better idea of where the users are. We can see that 16 of our 25 participants are using a mobile device for their browsing. (Figure 3) This means that they are on-the-go more than the laptop or desktop users. I did not get enough information to find specifically where they are using their device to browse Reddit.

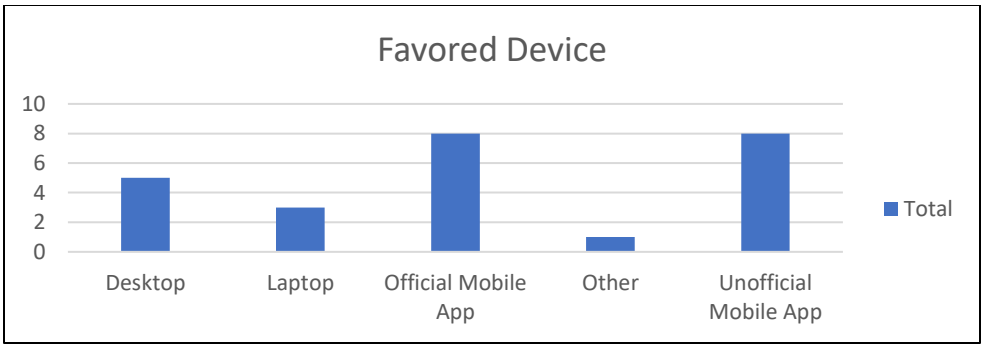

Figure 3 — Main Reddit Device count totals.

5.1.3 *What is the context of the task?*

Reddit has a lot of information going on always. From the participant observation and the think-aloud it was clear that there was a lot of information bombarding the user and shown in a lot of different formats. External to the task itself can be any context where we have a phone. This includes bus stops, waiting rooms, walking and more. This was also not answered clearly like the 'where are the users' question, and there should have been a question around 'What do you do when you are browsing Reddit?' but that was an oversight on my part. I think I felt like I knew the context well enough as a user myself, but it should have been included in the survey, nevertheless.

5.1.4 *What are their goals?*

As we can see from the survey, most of the users are there to read posts. Also, the average for the question "I am interested in finding new subreddits" was a 3.64 which is leaning towards agree. Most of them are on reddit and want to ability to find new things. Even more, the average for "I use Reddit to find the answers to specific questions" is 3.76 which again leans to the agree side of things, whereas "I use Reddit solely for entertainment" is at 2.76, leaning to disagree. Finally, people join new subreddits to get more information about the topic of the subreddit (4.2, the most agree of the survey)

In short, people want to find information about topics they care about.

5.1.5 *What do they need?*

All in all, the respondents are not confident in being able to find specific posts, averaging 2.68 (disagree leaning). They need a way to find posts that relate to

their niches within Reddit. They need a device that can browse Reddit and they need information about the thing they are looking for. Through the think-aloud, I found that once the user was able to know what subreddit they should be looking at, they got much better at finding the post, so that is also something people need now.

5.1.6 *What are their tasks?*

The tasks are finding the right words to search and then refining that search within the app until they can find the post they want. (Participant Observation)

5.1.7 *What are their subtasks?*

The subtasks of these tasks include being on the app, finding the search bar, typing in their query, browsing the results, and refining the search with the options menu. (Participant Observation and Think-Aloud)

5.2 Appendix 5.2: Expanded Search Prototype

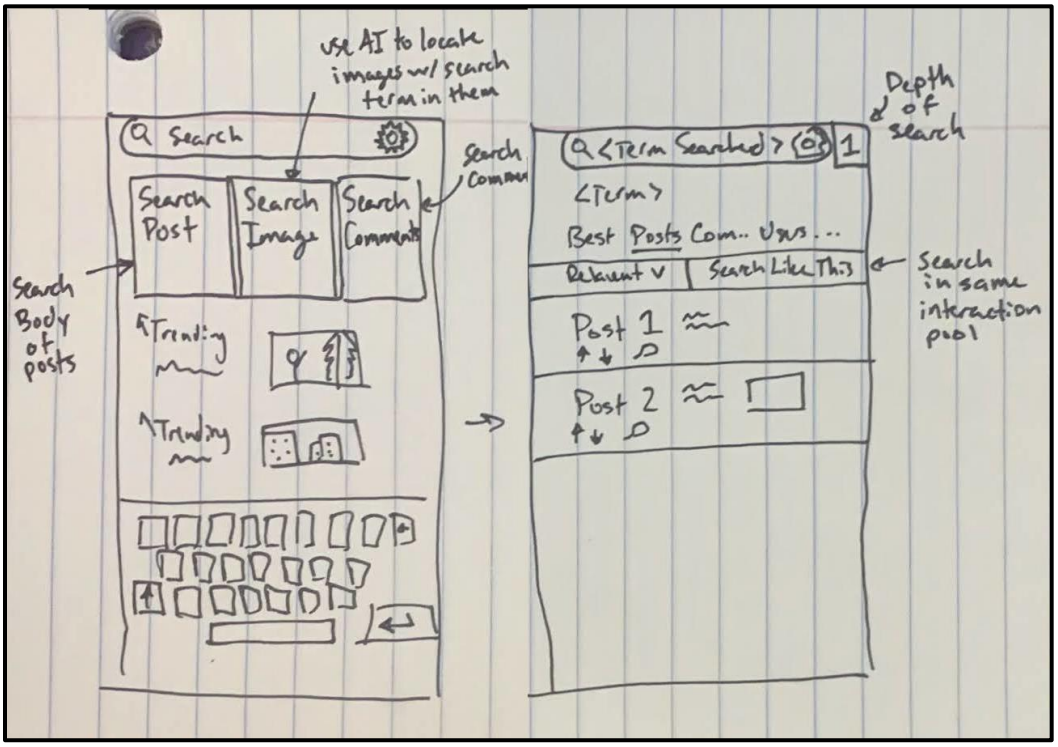

Figure 4 — Two screens from the wireframe prototype for extended search. Initial search screen with the option to choose what aspect of post to search (left) and Results screen with the

depth of search and option to search just in the interaction pool of initial search (right).

5.3 Appendix 5.3: Map Search Prototype

Figure 5 — Navigation screen for finding similar subreddits. Subreddits would be sorted by size on the x-axis and activity on the y-axis. When a subreddit is tapped, information would show on top.

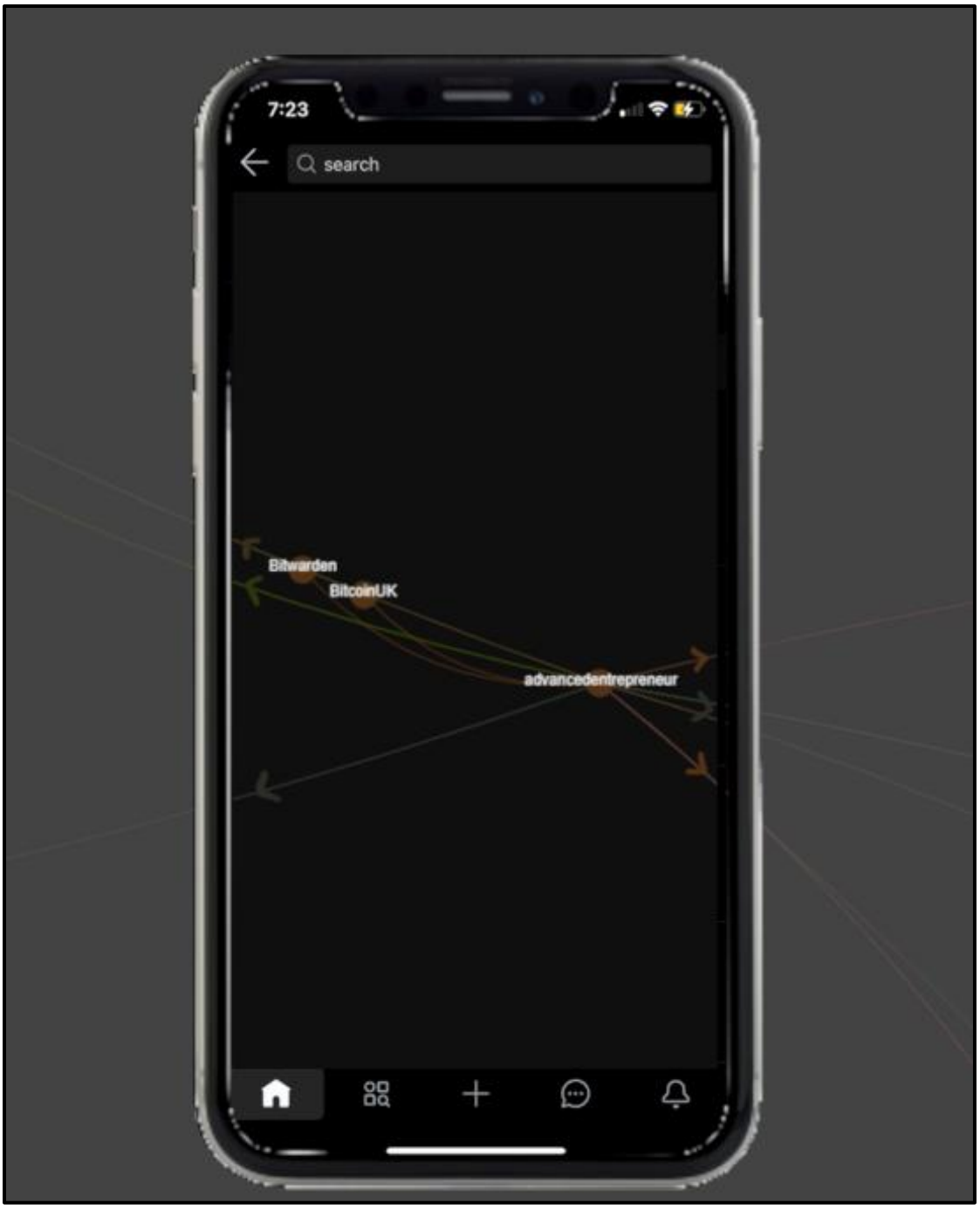

Figure 6— While browsing the map, information and sizing buttons would disappear.

5.4 Appendix 5.4: 'Phone' Search Prototype

Rarely are the titles of posts enough for me to determine if the post is the post I am looking for. This proposed solution would display an entire post to a user and allow them to browse this post normally. The user would be able to see the title, subreddit, username, comments and most importantly, they would see the body of the post. If this is not the post the user is looking for they would swipe the post to the left, brining in the next search result in the same format. The goal of the solution is to give the user the most information about the post as fast as possible, to increase the speed they can evaluate if this is the post they are looking for or not.

Reddit supports this action when viewing posts as images (if you tap directly on an image, you can swipe left and the next post that contains an image will be displayed), so adding this to all posts (text, links, videos and images) would not break the language Reddit already uses.

There are times where a user would rather look a list of results to evaluate the posts with less information but moving from post to post quicker, and this would still be supported. The list view of results would be accessible from a hamburger menu in the top right of the screen (where options for videos already exist).

Ordering is crucial for this functionality to succeed and there are a couple different ways to achieve this. These will be able to be selected by the user, but the different modes will be: highest interaction, highest score, most relevant, most recent and most likely. Highest interaction will sort by the most interactions with the posts (comments, votes and comment votes), highest score will sort the same way Reddit sorts its posts but only from the search results, most relevant will be the order they show up right now, most recent will sort on newest and most likely will take into consideration interactions from users that are similar to the user searching.