Assignment 5: Low-Fidelity Prototype

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Team: Roots, in the Digital Democracy 10:30 Studio

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Introduction

Mission Statement

Roots helps people discover ways to give back to their communities, while meeting new community members in the process. The Roots slogan is "grow together," representing the app's potential to bring people together and also to help them find new sources of fulfillment in helping their communities.

Solution Overview

In our initial and secondary needfinding exercises, we discovered that many of the people with whom we spoke would benefit from increased empathy from and for others; face-time interacting with community members; and positive reinforcement and feedback for their acts of civic engagement.

Roots addresses the needs for empathy, personal face-time, and positive feedback. The basic premise of the app is simple: community leaders and individuals can post new events to the platform to indicate that they would like help with the event. Meanwhile, others using the app can browse the available events to discover those that interest them. These volunteers RSVP for the events they will attend, and upon doing so are able to learn more about and communicate with others going to their events.

The three central tasks we designed in this exercise are: discovering new ways to contribute; getting to know other people in the community; and sharing information about contributions with others.
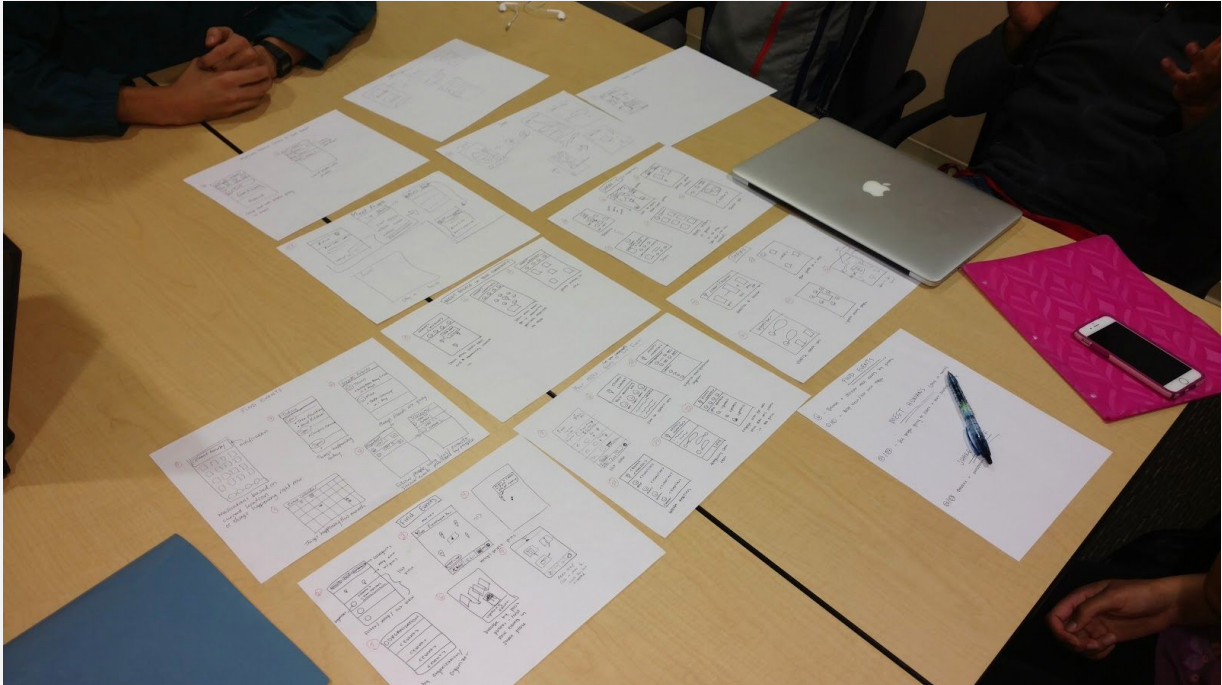
Sketches

Figure 1a: Overview of sketches

We sketched rough interface ideas for mobile phone, wearable, VR, and tablet platforms. We selected the mobile phone and wearable concepts as the top two designs with which to proceed to storyboarding.
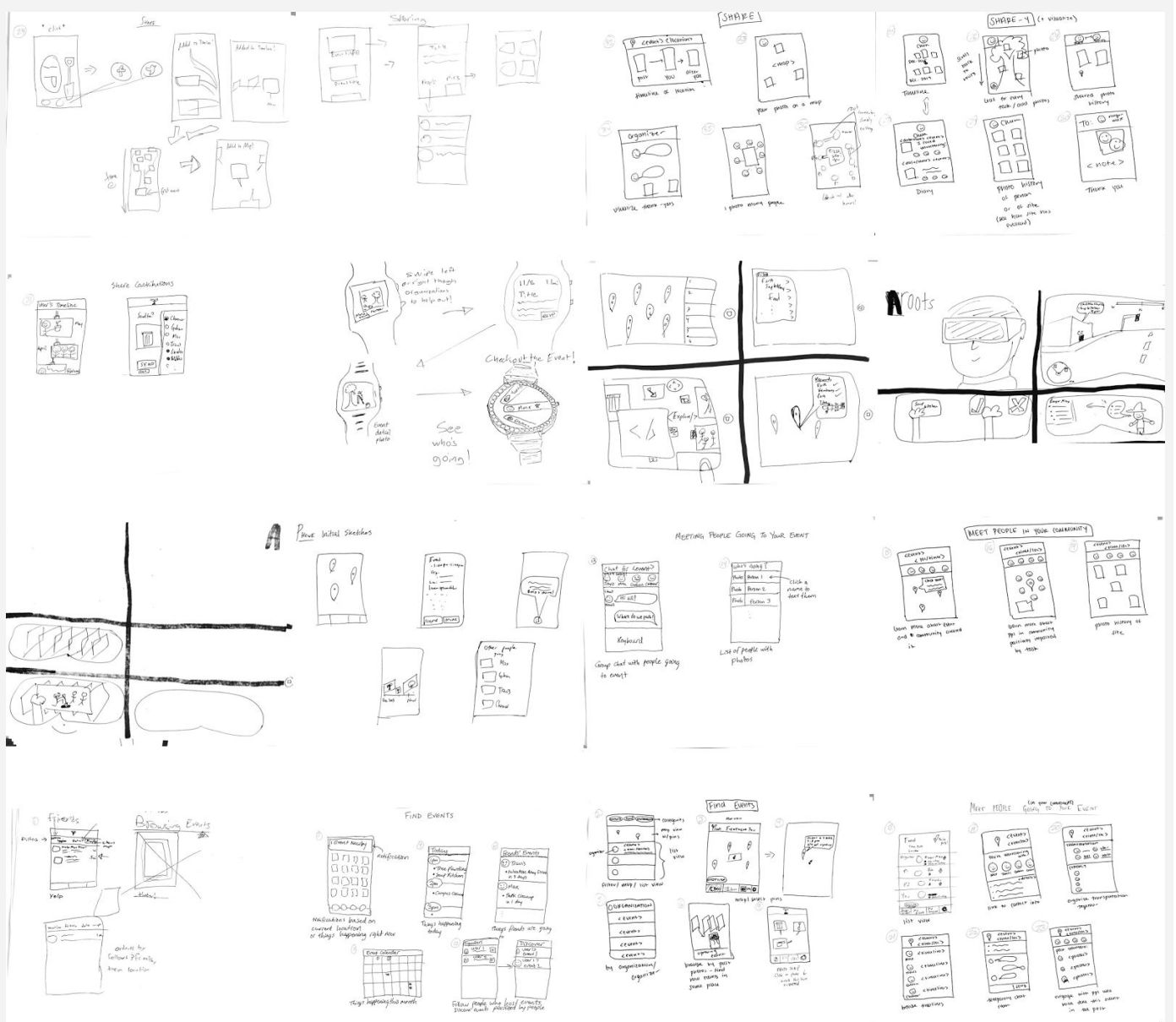
Figure 1b: Concept sketches
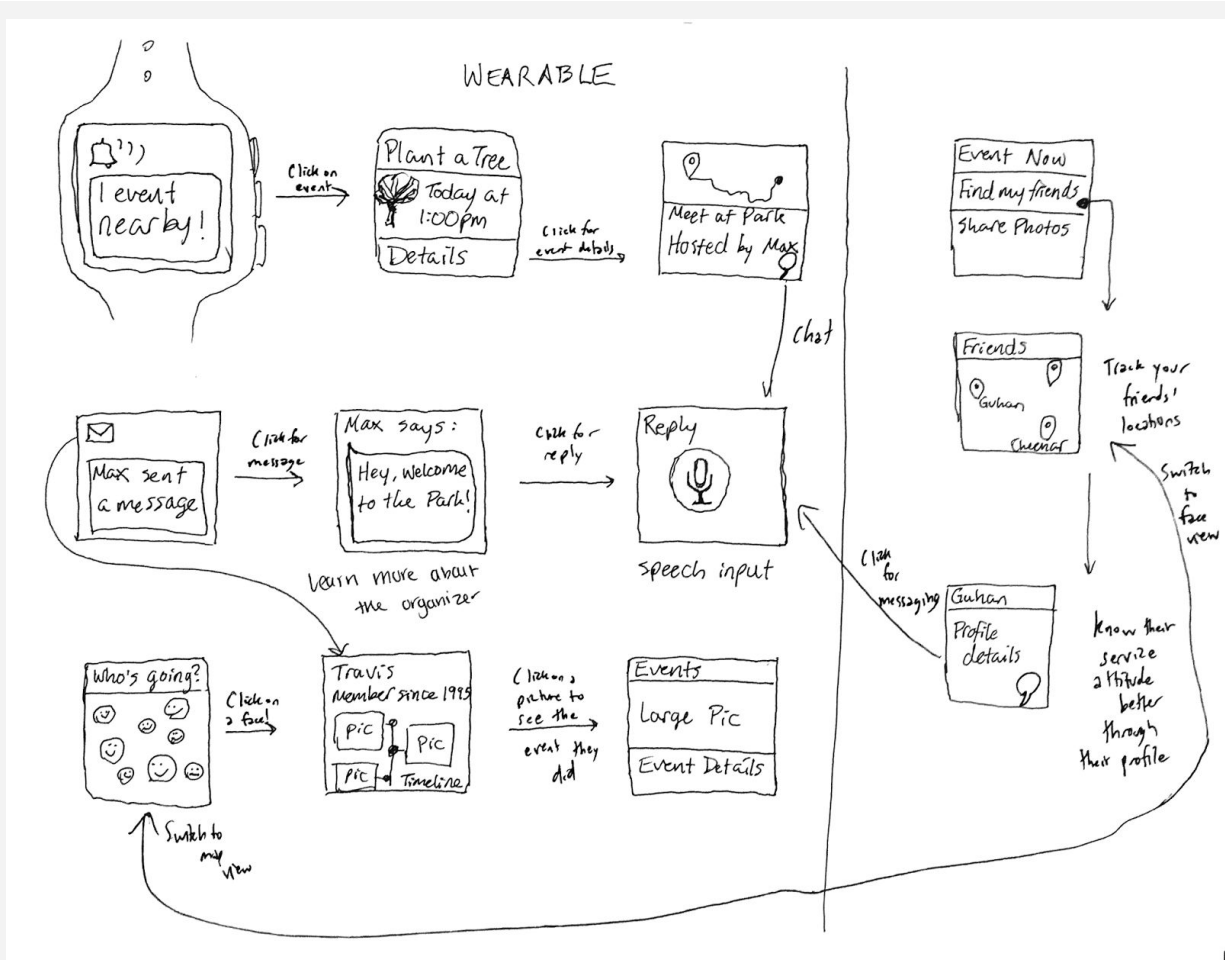
Storyboards for Top Two Designs

Figure 2a: Storyboards for Wearable Design

The wearable design centers around relevant, timely notifications telling the user about upcoming and current events, and allowing the user to communicate with others (Figure 2a).
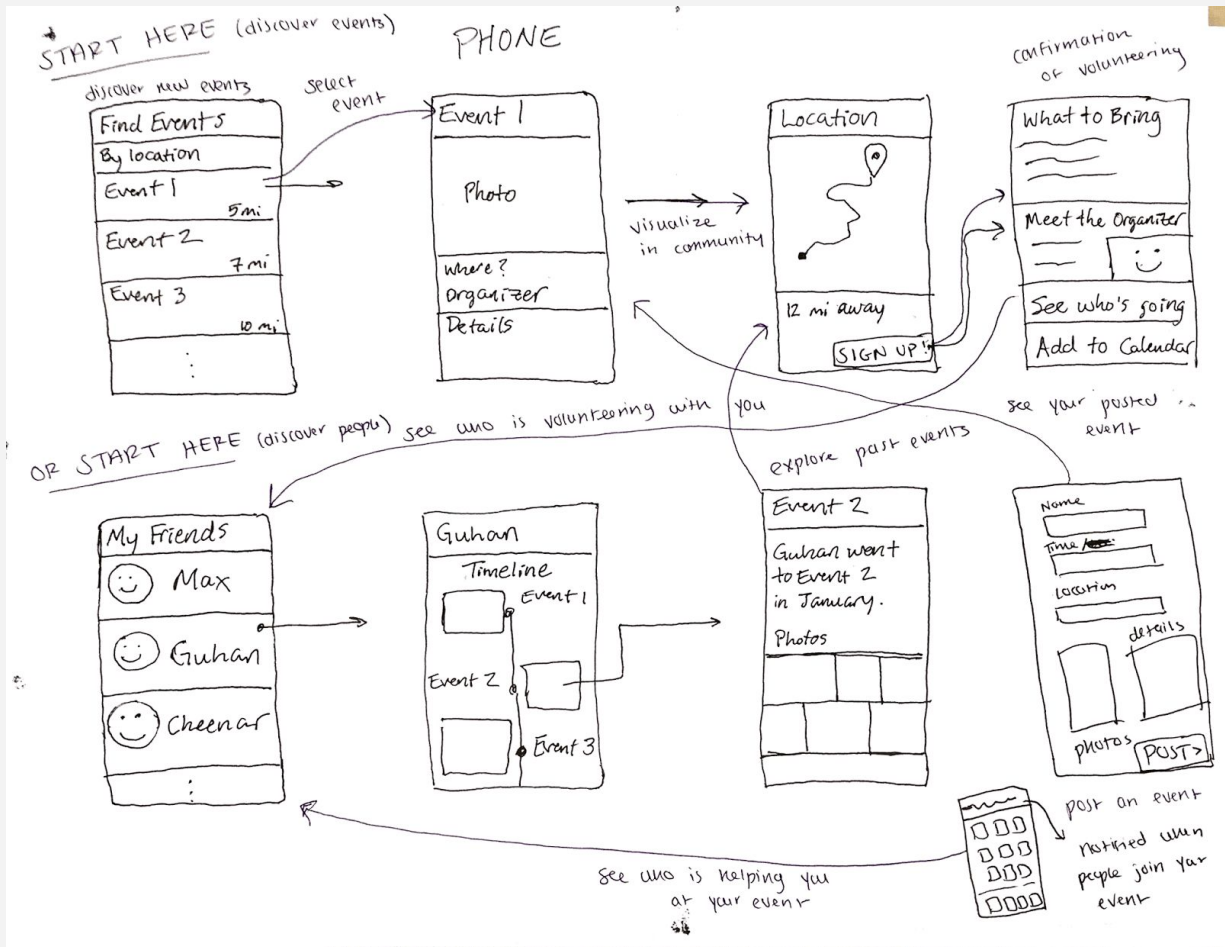
Figure 2b: Storyboard for Phone Design

The phone design is analogous to a local search app, like Yelp, combined with a social media app like Instagram.
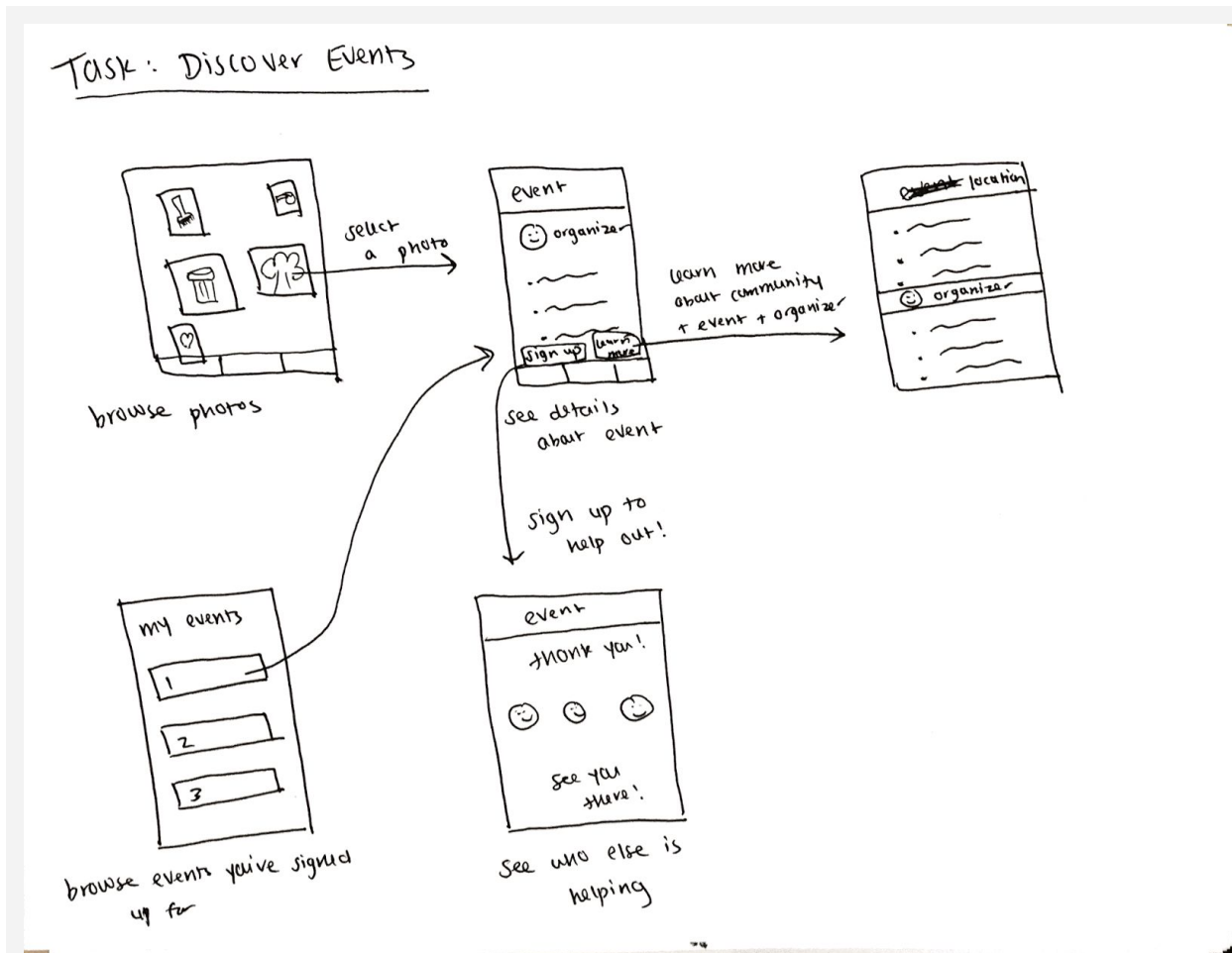
Selected Interface Design

Task Storyboards

Figure 3a: Storyboard for Task 1, Discovering Ways to Contribute

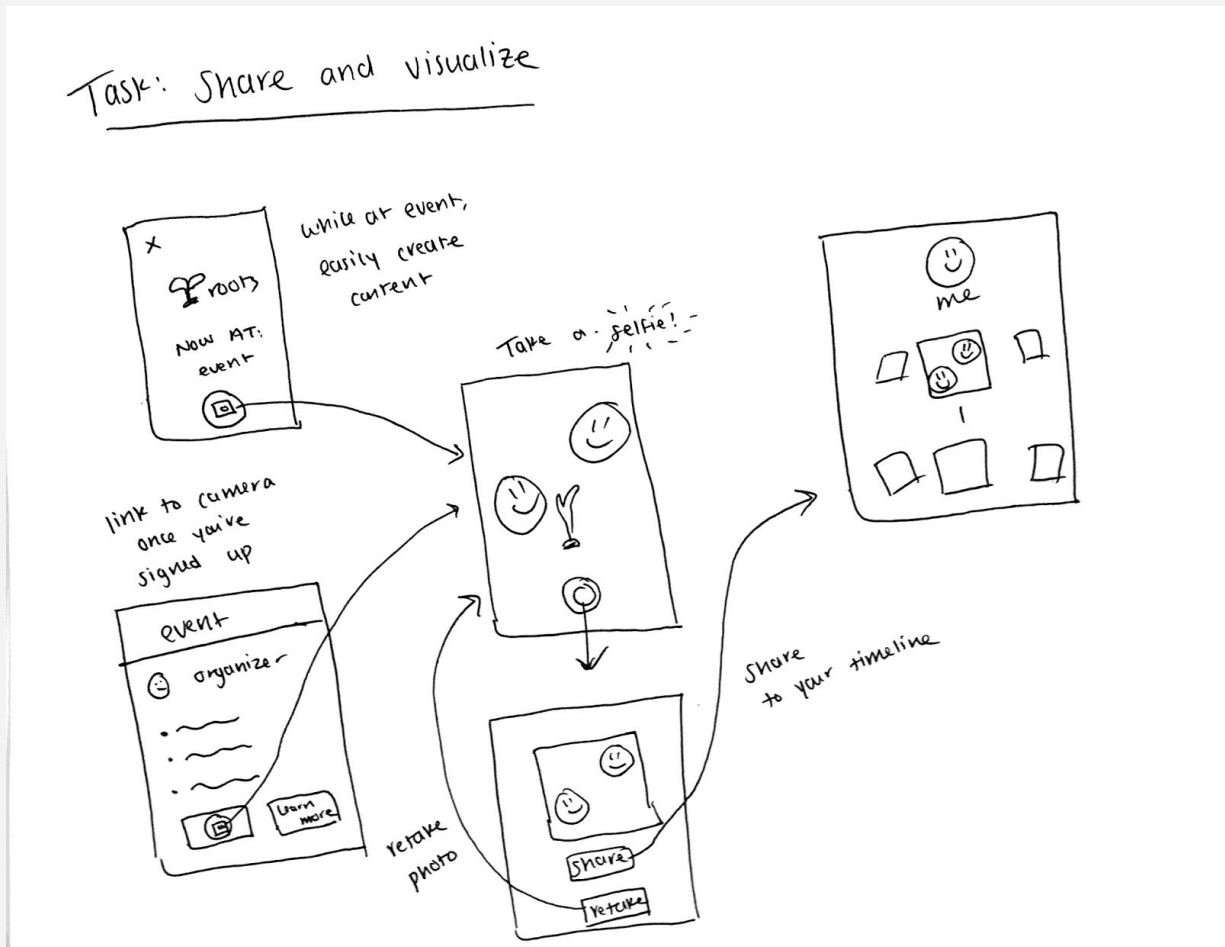Figure 3b: Storyboard for Task 2, Learning More About Others

Figure 3c: Storyboard for Task 3, Sharing Your Contributions

Reasoning for Selection

We selected a mobile phone design from the top two choices of mobile phone and wearable interfaces. Mobile phones are more ubiquitous than wearables, particularly among less technically-inclined people, allowing us to target a broader audience. Phones have larger screens, meaning they can display more pertinent information about the events and participants, which is particularly advantageous for browsing through many options.

On the other hand, the phone app marketplace is crowded, and creating an experience that feels novel on a phone is more difficult. Pulling out a phone can be distracting compared to using a wearable device, and might detract from the real-world task facilitated by the app.

Wearables offer the possibility of less invasive notifications, and often have excellent voice and geolocation systems to aid in their interface designs. The geolocation and notification features of wearables would allow relevant event notifications when a user is near an event, but these features are not unique to wearables; they are simply more commonly exploited due to the physical constraints of a smaller device. Wearables also offer the possibility of a more

intimate rewards or score system, like those of popular fitness apps. We considered ways of gamifying the community experience, but decided that we would prefer to focus on enabling interactions and let the new relationships and memories be the reward.

Wearables suffer from small screen real estate, intermittent connectivity (depending on the platform) and more limited input modalities (for example, smaller touch targets or even several general-purpose buttons). For these reasons, we decided to move forward with the mobile phone interface.
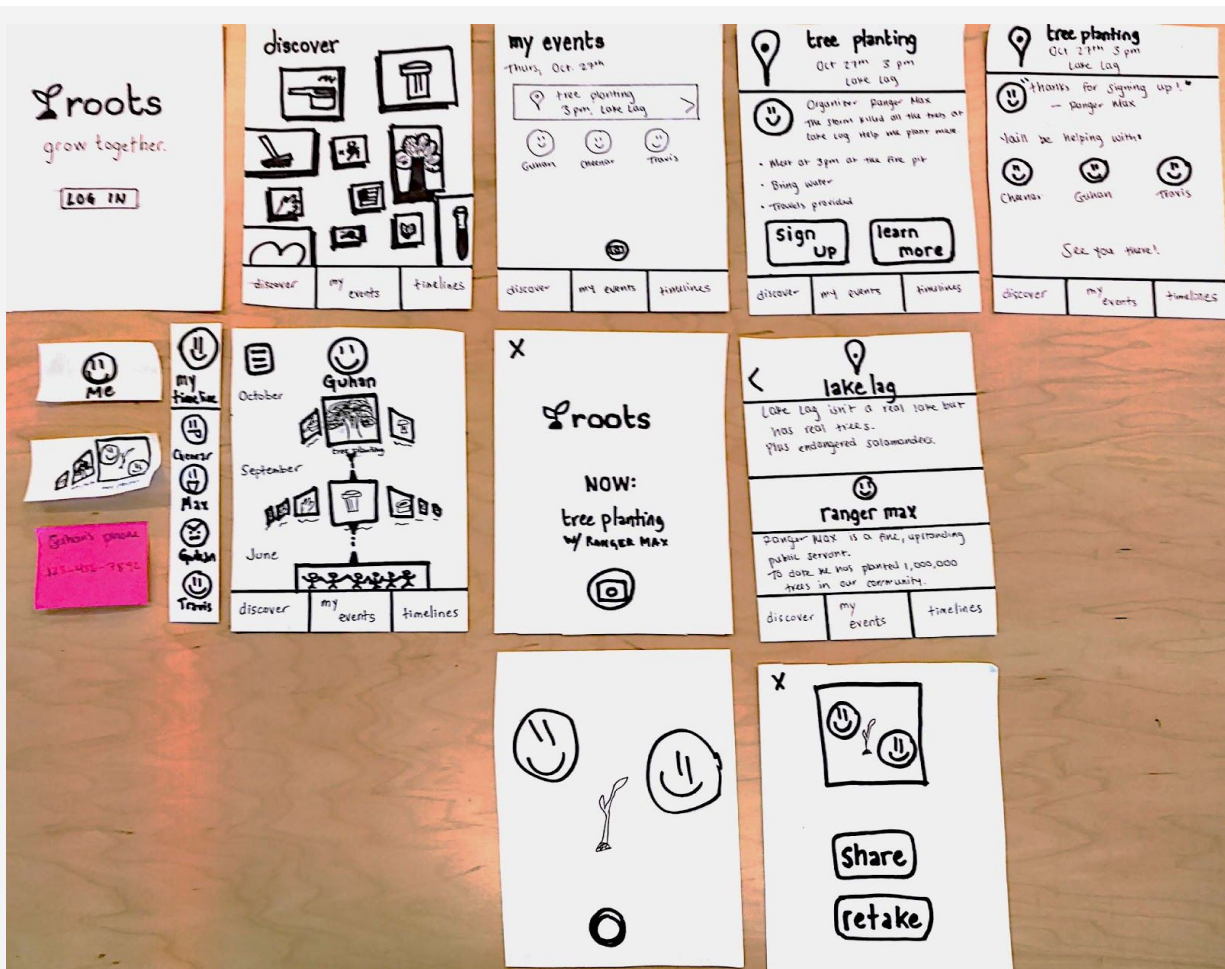
Prototype Description

Figure 4a: Prototype Overview

Our interface prototype consists of several drawings on sheets of plain paper. Large sheets represent entire app screens, while small sheets serve as overlays, popups, and menus that can appear over the main screen.

Participants can tap on the onscreen buttons to open new screens, popups, or menus. A prototype facilitator (Cheenar) manipulates the pieces of paper in response to the participant's actions.

Task 1: Discover Ways to Contribute

In this task, participants imagine they are interested in finding ways to help with the upkeep of their favorite local park. Their task is to find an event related to the park and sign up to attend.
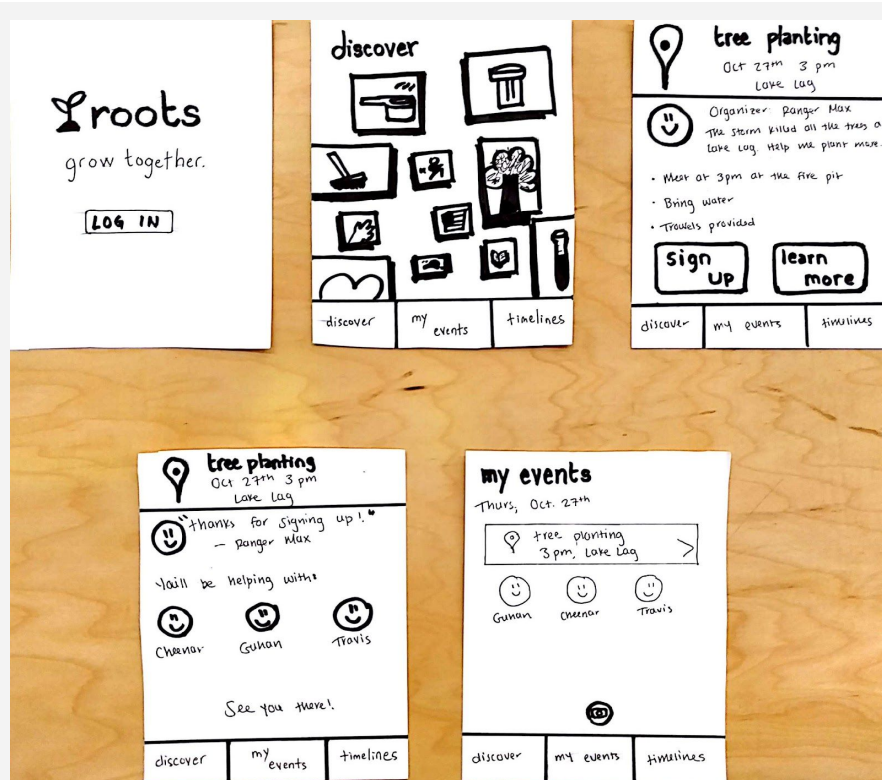
Figure 4b: Prototype Screens for Task 1, Discovering Ways to Contribute

Task 2: Learn More About Others Attending Your Event

In this task, participants imagine they have already signed up to attend a tree-planting event in the park. Their task is to find out more about other people going to the same event. Specifically, they are tasked with learning more about the interests of a user named Guhan, who is also attending the event according to the app.
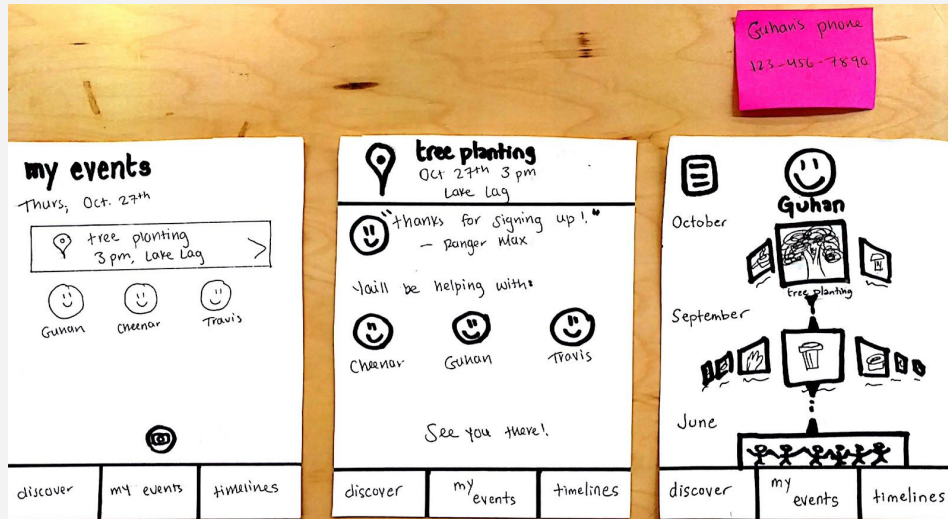
Figure 4c: Prototype Screens for Task 2, Learning More About Others

Task 3: Share Your Contributions

In this task, participants imagine they are at the tree-planting event that they signed up for in the previous task. They have just planted a tree with their new friend, Guhan. They are tasked with taking a photo of themselves with Guhan and their new tree, and sharing it with others.

Figure 4d: Prototype Screens for Task 3, Sharing Your Contributions

Method

Figure 5a: Participant 101 Using the Prototype

Participants

We studied four different participants to evaluate our prototype. Participant 101 is an executive coordinator for public service projects. Participant 102 is a college student. Participants 103 and 104 are lecturers in the life sciences. We recruited the participants by delivering them the "Intro" section of our script (see Figure C1 in Appendix C). We did not offer monetary compensation for their participation.

Environment

Because the prototype consists of sheets of paper, we facilitated its easier use by testing the participants while they were seated at a table. We did not require any other specific environment traits, since the app should be usable at any location. One participant was outdoors during the test while the other three were indoors.

Tasks

The three central tasks we designed in this exercise are: discovering new ways to contribute; getting to know other people in the community; and sharing information about contributions with others.

Procedure

At the start of the study, the narrator (Travis) reads the introductory portion of the script to the participant. The participant is presented with the consent form and decides whether to continue. All of our participants chose to continue after initially agreeing to participate. We ask the participant to narrate his thoughts as he uses the interface.

The narrator then reads the first task. The participant interacts with the prototype, while the prototype facilitator (Cheenar) manipulates the prototype screens to simulate an interactive interface. The note-taker (Guhan) records the participant's statements, actions, and questions in the logs (see Figure 5a). After the participant completes the task, the procedure starts again for the next task.

Finally, we ask the participant for any additional thoughts or questions after he or she has completed all of the tasks.

Test Measures

During each test, we observed the participant's actions and noted relevant observations in our test log. We particularly looked for things that made people happy, places in the interface where they got stuck or hesitated, and places where they took an action that led them further from their target.

Results

Our testing uncovered multiple UI issues, the most notable of which are listed below, along with their severity levels:

1. No option not to share the photo taken of the event. "Share" meaning is ambiguous (share to other social media or share in app?) (level 4)
2. No option to specify how many people are signing up (e.g. "can I bring my kids?") (level 4)
3. Path to find people through shared event is unclear (level 3)
4. No way to sign up for an event from the "learn more" screen (level 3)
5. Unclear that face icon on timeline page is a contact button (level 3)
6. Not possible to return to event confirmation page after leaving it (level 3)
7. Ordering and focus of timeline view are unclear (level 2)
8. Purpose of sidebar menu is ambiguous (level 2)
9. Unclear who will see shared photos (level 2)
10. Bottom taskbar is not prominently visible (level 2)
11. Unlabeled pictograms on discover screen were slightly ambiguous (level 2)
12. Not possible to add a phone number to contacts directly within the app (level 2)
13. Clicking "discover" when already on the discover screen (level 1)
14. Camera icon ambiguous (level 1)

15. People check their "my events" page to ensure they're signed up, even after they see the confirmation screen (level 0)

The severity levels correspond to the following legend:
- 0: no problem
- 1: cosmetic problem
- 2: minor usability problem
- 3: major usability problem
- 4: usability catastrophe

Discussion (Takeaways, Improvements)

Our participants responded positively to the prototype and to the concept of the app. Participant 101, the public service executive, particularly liked the idea, and told us very enthusiastically that she would definitely use it if it were available. From our tests, we learned a lot about minor UI/cosmetic changes that we should make to our low-fi prototype. There were, however, a few bigger takeaways, as discussed below.

In general, the participants completed the tasks successfully without further prompting. However, when asked to find Guhan's phone number in his timeline page, all but one participant hesitated before trying to click his profile photo. This highlights an area for improvement: making the UI for contacting other volunteers more intuitive. Because we couldn't simulate the actual experience of participating in the event with others and communicating with them before or afterwards, we were unable to determine whether providing a single participant's phone number was the most effective way to foster communication, or if there is a better way.

Participant 104 highlighted a question we had not considered: when browsing for an event, he wished to know whether he could bring his kids. We could remedy this gap with something as simple as augmenting the event information with suggested ages, or we could consider a more thorough reorientation towards families and add more features relevant to them. In a more broad context, we could allow the option of one user entering multiple sign-ups if they wish to bring others who are not using the app (such as young kids).

Participant 101 interpreted the timeline feature of the app differently than we expected her to. We originally intended for the timeline to be a way of looking back at past events, but participant 101 saw a tree photo on the October portion of the timeline, and assumed it was an indicator of a future event. We may incorporate this interpretation of the future in our actual app -- it's valuable to look through your own or someone else's past events, but it may also be helpful to see what other people are about to volunteer in as a way of discovering new events.

Another important observation we noted is that all our participants immediately checked their "my events" page after receiving confirmation of an event sign-up. This was interesting for us to observe, because we thought that seeing an event confirmation would be enough for them to verify that they were signed up for the event. However, all of them checked their "my events" page immediately, and expressed frustration when they were unable to find their events confirmation page again. We thought that the event confirmation page would be redundant once the participant had already seen it, but our tests show us that this might not be the case. This

suggests that one way to improve the UI would be to integrate event confirmation with the "my events" page more seamlessly. Perhaps upon signing up for an event, a participant could be brought immediately to their "my events" page, or perhaps after signing up for an event, we could make the confirmation page available within the "my events" page.

One key component of our app that relies on real-life, in-person interactions is the interaction between volunteers during the actual volunteering event. Because this was a low-fi test of the app UI, we didn't try to simulate this part of the app. However, as we move to higher-fidelity prototypes, it may be valuable for us to simulate actually volunteering with a new person after exploring their timeline to see how it does or does not enhance the actual act of volunteering. Similarly, our testing was unable to assess the organic discovery process for events of interest, because we had to guide the user to interact with a premade event screen.

Appendix A: Forms Given to Participants

Form 1: Consent to Participate

Consent Form

The "roots" application is 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 roots. 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 (Guhan Venkataraman, Travis Geis, Max Wolff, Cheenar Banerjee) 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 roots 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 B: Raw Participant Interaction Notes

Participant 101

The first participant was from the Haas Center for Service, and was surprised that this was a CS course! She thought that we were from the d.school.

Task 1: Discover Ways to Contribute

She first looked at the buttons at the bottom, and "filtered" through them. She decided that My Events and Timelines were not the right buttons to click, and then clicked "Discover." She stayed on the same screen, and then realized that she was already on the Discover screen. She clicked the tree and got to the event details, and wanted to learn more, so she clicked that. She didn't see how she would immediately sign up from the Learn More page. Once she signed up, she "wanted to make sure that it was actually there" so she clicked on My Events.

Task 2: Learn More About Others

She first clicked on Timeline, then clicked the drop-down sidebar menu to get to Guhan. She answered the question "What events are he interested in?" with the events that she saw on his timeline. "Sweet! I can learn more about him!" She clicked the tree planting icon and was taken back to the event page, which "followed her expectations." When asked to contact Guhan, she said that it wasn't immediately apparent that she had to click his face in order to get his number.

Task 3: Share Contribution

She said, "Oh, based on this screen, the app knows I'm in the proximity of the event so it knows I should take a picture." She took the photo, and she loved that it got shared to her timeline. A question that she had was: "Is it sharing with everyone's timeline that you're connected with?" We answered with "This app shares the photo with people that have gone to events with you."

Direct quote: "I would totally use this app if it were one!"

Participant 102

Task 1: Discover Ways to Contribute

The second participant said, "If I'm going to park, I'd click on discover, then the tree." Then he was interested, so he signed up. He said that the event information on the event signup page was enough, so he didn't press learn more. He assumed that he's signed up, and he said that he would like to see it in My Events, and there it was ("Boom!").

Task 2: Learn More About Others

The participant started by clicking on My Events, since he "knew he signed up for an event with him already." He then clicked on Guhan, and clicked on the hamburger menu to find out what I was interested in. When he found out this wasn't the method/question, he said ""Ooh, maybe not. I'll see what he's interested in with his timeline." The participant clicked on the face when he was asked to find his number. "BOOM! Cool."

Task 3: Share Contribution

He saw the camera on the opening screen and clicked on it - "boom" - and then took the picture. He "liked the photo" so he clicked share. He remarked that it was cool it came up on his timeline, but was wondering whether there were capabilities to share elsewhere (Facebook/Instagram) or save the photo to camera roll.

Overall, he said the prototype was effective, and he said that there was always a question of "what you can press on" when testing a new app. "If I press it and something happens, cool. If not, that's ok too."

Participant 103

Task 1: Discover Ways to Contribute

In the Discover screen, the participant assumed that the pictures were buttons. She clicked on the tree button, saying that it looked like a park. She saw the tree planting event and remarked that it looked great. She wanted to learn more, so she clicked the button. She liked that endangered salamanders were included in this additional information. She clicked back and sign up, and remarked that the interface was "super easy."

Task 2: Learn More About Others

In order to find out what Guhan was interested in, this participant clicked on Timelines and then went to the tree planting event. This brought up the camera/learn more screen, which was problematic. "Oops," she said. Then she clicked on My Events, and then Guhan (this was the expected series of actions). She then click on Guhan, and easily found the phone number. She said that she expected to see other things/information about Guhan in his profile. She liked the feel of the scroll side to side in the Timelines screen. She said that the confirmation page with all of the names was hard to find. She also mentioned that Timelines is cool, but that it was unclear what it means as a first-time user.

Task 3: Share Contribution

She found this task to be very easy and said "cool, now I will remember it forever on my timeline!" She wished there was a way to share to social media.

Participant 104

Task 1: Discover Ways to Contribute

The user remarked that the park was relevant to him. In order to progress, he remarked that he might click on the tree or discover. When brought to the page with the event, he said that he'd like to learn more. He said that he was interested in knowing if this was an event where he could bring his kids. As with all other participants, after signing up, he went to my events to check for it.

Task 2: Learn More About Others

"I'm going to look at My Events, since Guhan is in the tree planting event," he said. He had a remark about the Timelines interface: "Why is September the focus when October is the current month?" (this was referring to September being in the middle of the screen and October being up top). He also mentioned that scrolling down might imply the future and not the past, and was not sure why he thought that. In order to get the contact information, he said that he would mash on Guhan's face. He mentioned that it would be nice to be able to call directly or to be able to add to contacts.

Task 3: Share Contribution

This user said that he would never share photos, since it never occurs to him to share photos as he takes them. When he sees share, he expected "56 different ways to share it, via text, email, etc." He was a little disconcerted that the functionality of the app requires sharing the photo instead of saving it.

Appendix C: Extra Figures

Figure C1: Full Experience Script

Intro

We're students in a design course at Stanford. Do you have 10 minutes to help us test an early prototype of our app's interface? Your experience would be valuable for us to improve our app.We'd like to take photos of your interactions with the app, to help us precisely identify areas for improvement. We won't associate your name with your feedback or the photos. Here's a waiver to that effect. You're welcome to ask us questions about this process at any time, or to submit them to our professor, whose contact information is given in the waiver.

Detail

We're developing an app that helps you contribute to your community while meeting other people in your community. In this role-playing scenario, you will play the role of a community member who's interested in volunteering.

We'll present you with three hypothetical tasks to perform in the mockup of the app. For each task, you can click through the screens of the app by touching on the paper prototype. [show example of login screen] For example, you can click "Login" on this screen to get to the next screen.

While you perform each task, please narrate what you're thinking. We'll take notes and photos to use for improving the app.

Task Prompts

Task 1: Discover an event

Prompt: "You love the park in your neighborhood. You're interested in discovering ways you can contribute to the park's upkeep. Find an event related to the park, and sign up to attend."

Task 2: Get to know other volunteers

Prompt: "You've already signed up to plant trees at the park tomorrow. You've heard that someone named Guhan is also going to the tree-planting event with you. Find out more about Guhan's interests by looking at his timeline. What is Guhan interested in? Next, find out his phone number."

Task 3: Share your contributions

Prompt: "You've just finished planting a tree with your new friend, Guhan. Use the app to share a picture of you with Guhan and the new tree."