



**roots**

grow together

Final Project Report

December 10, 2016

# About Us

Roots helps you find ways to contribute to your community through group activity while meeting new people.

<http://hci.stanford.edu/courses/cs147/2016/au/projects/DigitalDemocracy/Roots>



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# Problem

During our needfinding process, we found needs for empathy, face time, and positive feedback within communities. The people with whom we spoke felt that technology can be as isolating as it is uniting, and that the echo chambers online can create unsafe and unwelcoming spaces. Furthermore, they felt misunderstood by others in their communities. Our interviewees expressed a desire to meet and develop empathy with others in their community face-to-face. Our interviews showed us that many people aren't fully aware of all the ways that they can engage with and help their communities. Finally, we found that people desire positive feedback for the positive actions they take.

We built Roots around these core needs. With Roots, people can not only find ways to help their communities, but they can also meet others in their community and develop bonds based on service to a shared community. Roots allows users to find new events, connect with others, and look back on the positive contributions and connections they've made through Roots.

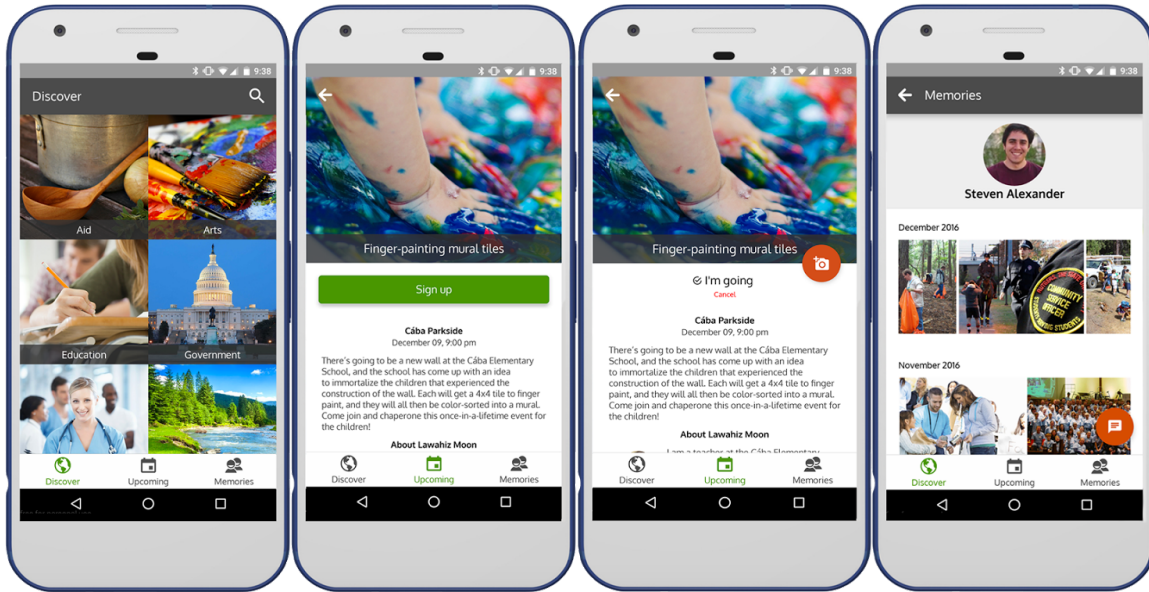


Figure 1. Overview of Roots.

## Tasks

### 1. Share and visualize your contributions (simple)

As users complete service events through Roots, they can upload photographs to the app to remember the people they volunteered with and the positive impact they had on their community.

This task embodies the idea of positive feedback. As people see the contributions they've made grow and look back on the people they've helped, we hope that they'll feel validation for the work they do. Furthermore, as we mention for task 2, by browsing through others' memories, people can better get to know others in their community and find other like-minded people.

### 2. Discover new ways to help (moderate)

Get more involved by browsing event categories, searching for events with particular keywords, or through an event's organizer and attendees.

We chose this task because an integral part of helping your community is finding ways to help that excite you. However, in our needfinding, we found that this isn't necessarily easy for people. Through this task, we hope to make it easy for people to help their communities in ways that they're passionate about.

### 3. Meet others in your community (complex)

Making connections with other people face-to-face strengthens the community and

builds empathy. Through the app, users can see photos that other attendees of their events have posted.

We chose this task because our needfinding showed us that people have a desire to connect with civic-minded people in their community. It's hard enough to meet new people, but it's even more difficult to find people that you can develop real connections with. We hope that through service to a shared community, people will be able to make real and lasting connections.

### Task 1

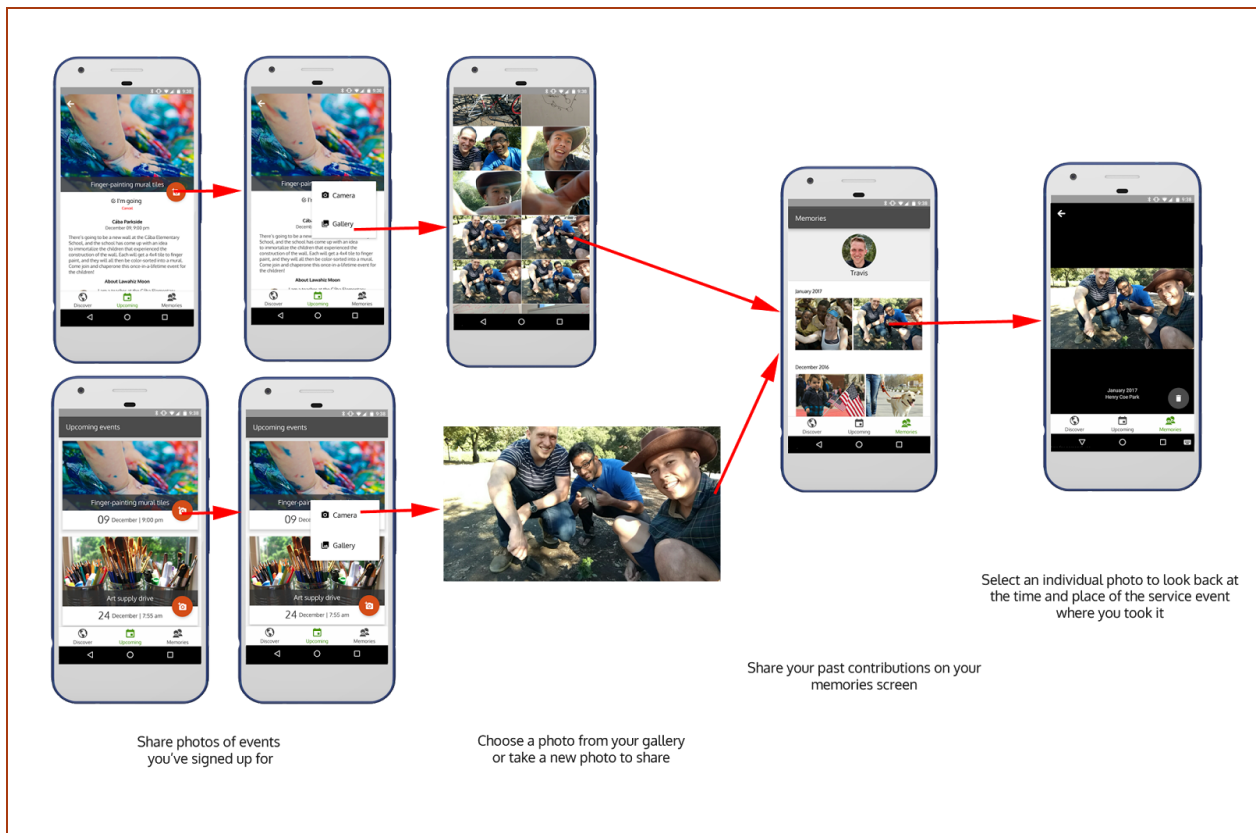


Figure 2a High-fidelity prototype storyboard of Task 1



## Task 2

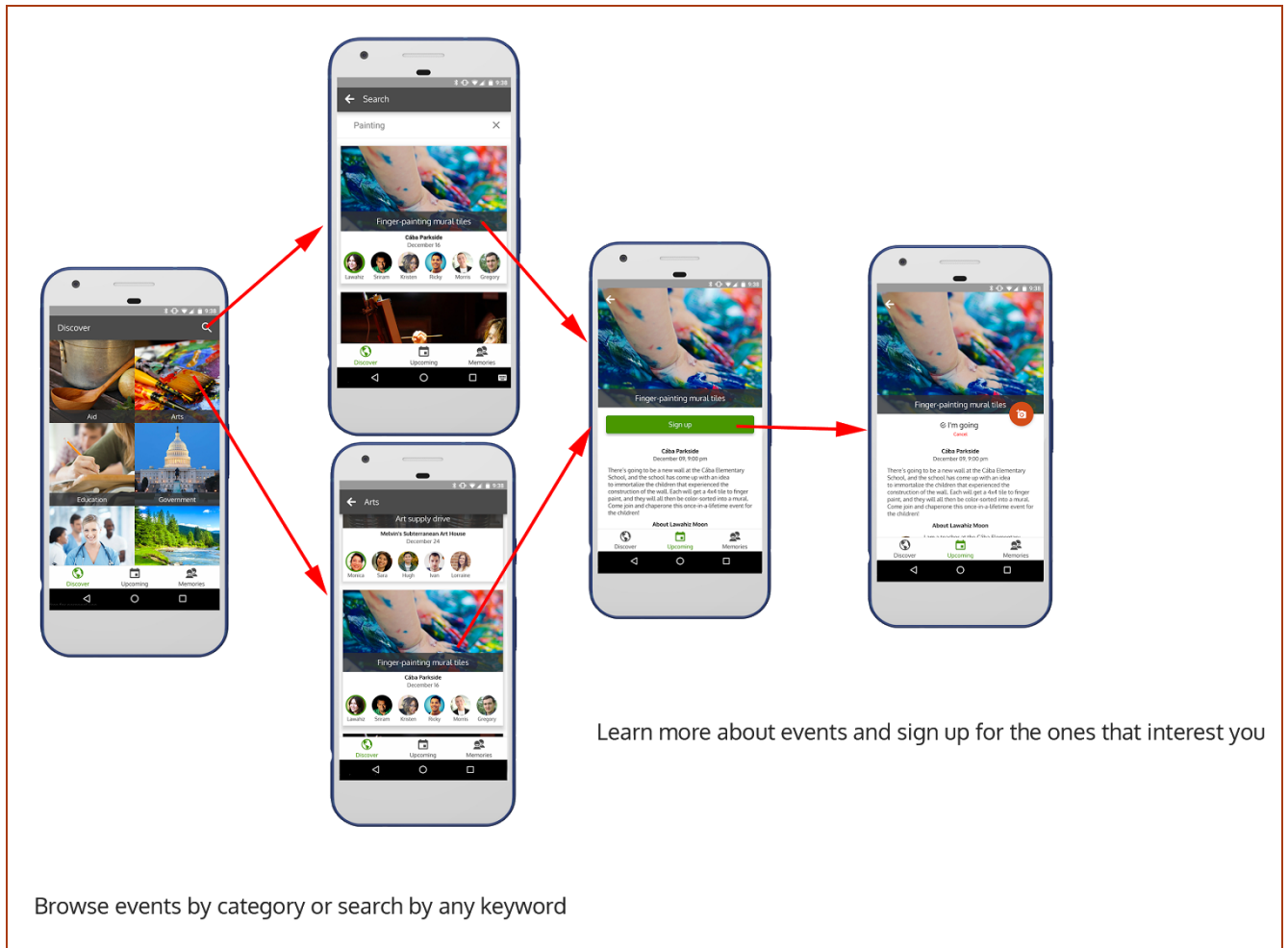


Figure 2b High-fidelity prototype storyboard of Task 2

## Task 3

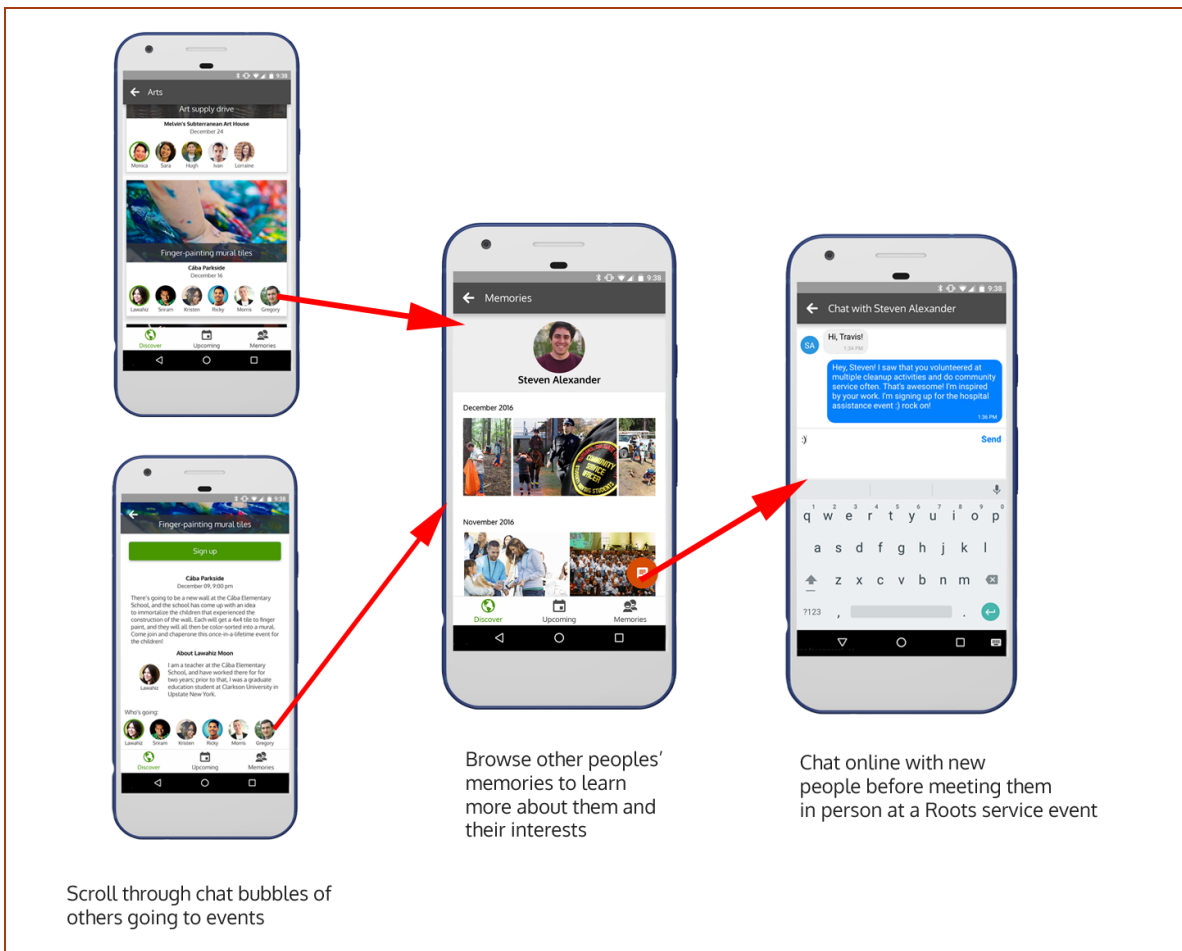


Figure 2c High-fidelity prototype task flow for Task 3

# Design Evolution

## Experience Prototypes

We started our app design process with a set of **experience prototypes**. With these prototypes, we wanted to test three key assumptions that we made based on our needfinding results:

1. Positive feedback makes people more likely to stay involved
2. People want to help their community if they feel connected to it and helping is convenient
3. People enjoy working together towards a shared problem

To test these assumptions, we created the following respective experience prototypes:

1. We gave participants a handwritten thank-you for picking up litter that we had planted
2. We showed participants a flyer describing the history of the Stanford clock tower, and then asked them to join a community service activity to clean the glass
3. We asked two strangers from the Stanford community to work together on a sign to make the "Circle of Death" bicycle roundabout safer.

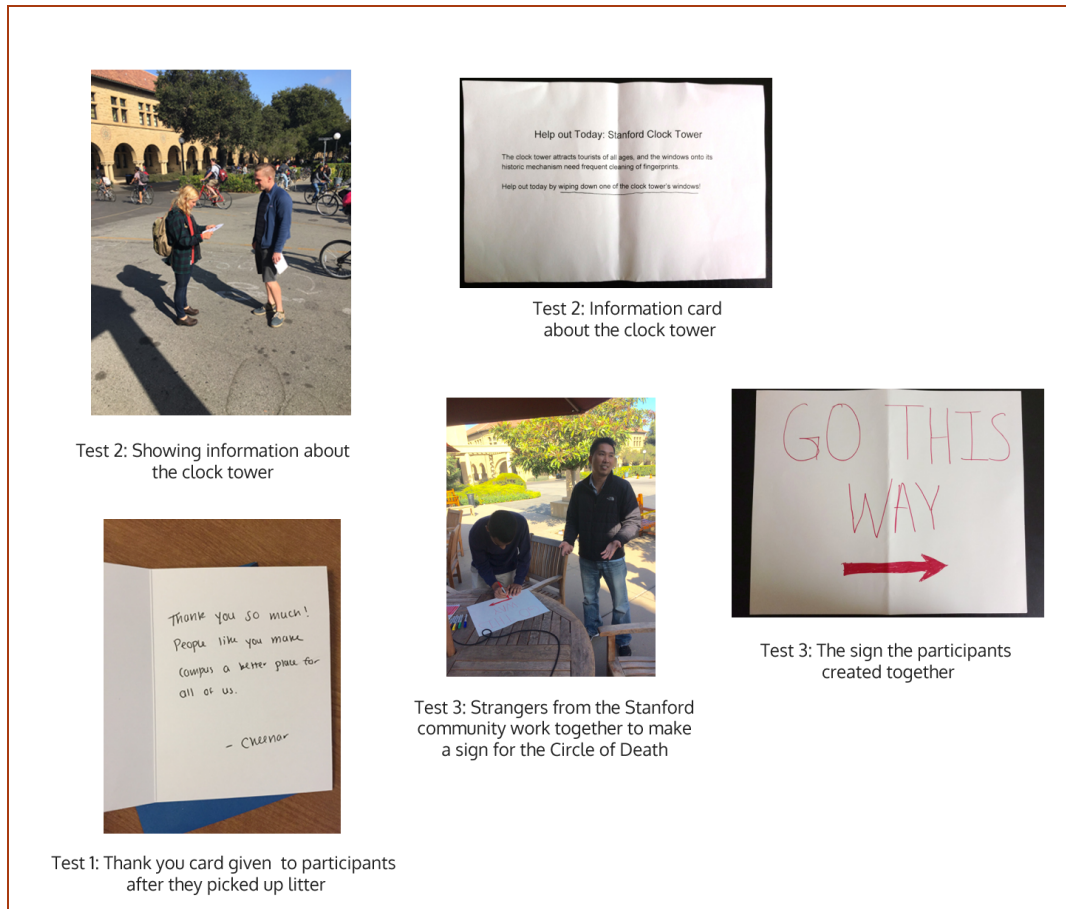


Figure 3 Experience prototyping overview

The results of our experience prototyping led to a few key insights about each assumption. First, we learned that while thank-you notes were positively received, their novelty would wear off quickly. We thus decided not to incorporate the thank-you note idea into our final prototype. Second, we learned that while people were generally quite interested in learning about important parts of their community, for example the Stanford clock tower, that interest didn't necessarily provide them impetus to volunteer their time for the community. Finally, the subjects of our third experience prototype indicated that they enjoyed working with someone new in their community over a shared community problem (in this case, ensuring safety in the Circle of Death).

# Concept Sketches

After our round of experience prototyping, we developed a set of concept sketches to realize our ideas as a mobile user interface. We sketched ideas out for mobile phone, wearable, VR, and tablet platforms.

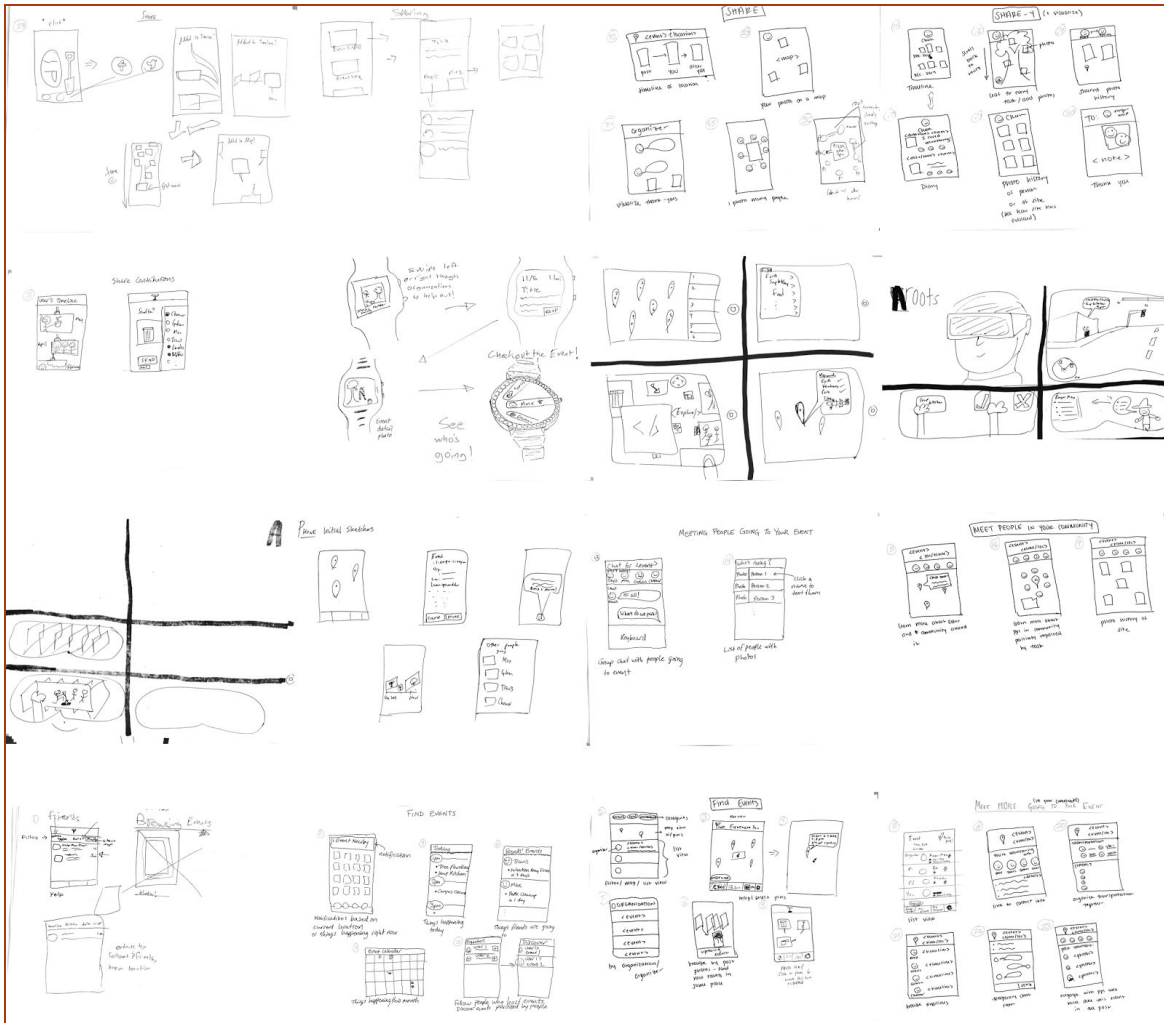


Figure 4a: Overview of concept sketches

Out of our concept sketch brainstorm, our top two choices were our mobile phone sketch and our wearable (smart watch) sketch.

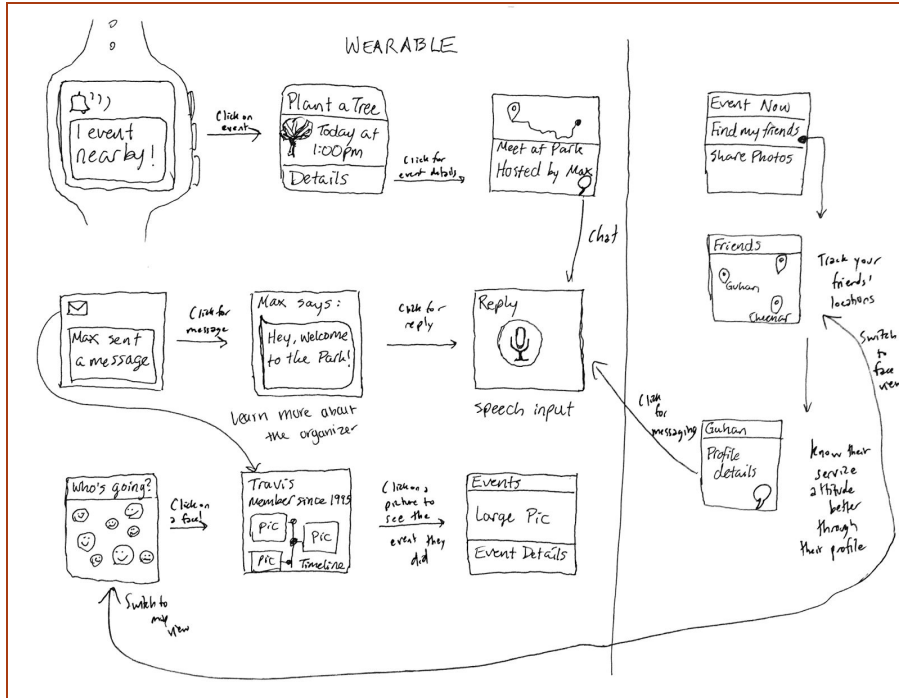


Figure 4b: Detailed wearable concept sketch

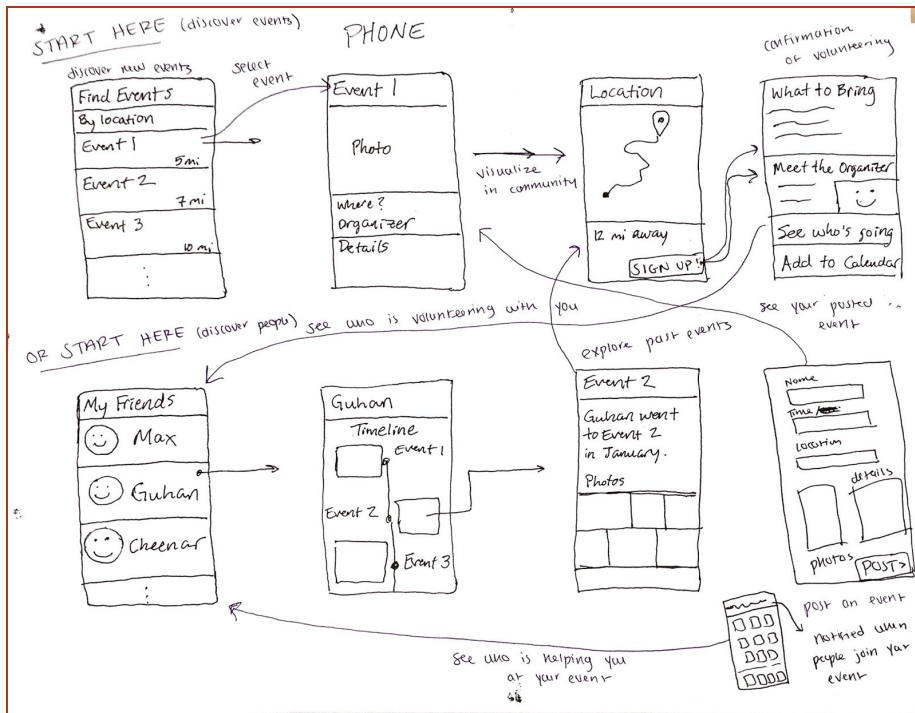


Figure 4c: Detailed phone concept sketch

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.

## Low-Fi Prototype

We incorporated these insights into the next stage of our design process, which was our **low-fi prototype**. We decided to make community event discovery more organic—instead of trying to force users' interest in particular community aspects, we decided to let users browse events across the community based on their own interests.

For all events posted in the app, users are still able to see a detailed description of the event and its importance to the community. Based on our experience prototyping, this was optimal for helping people discover ways to help—people are generally interested in learning more about their community, but ultimately only sign up to help if they are truly invested in the cause.

We also strongly integrated the idea of meeting new people through shared community service. We incorporated "chat heads" in our low fi prototype, which are user avatars that indicate who else is going to a particular service event. In addition, each chat head is clickable and leads to the corresponding person's memories page, which allows the current user to browse through the other person's past service work and gauge his or her interests. This enables citizens to forge real connections based on shared interests in the community, as well as volunteer and solve shared community problems together. The following images show overviews of each task flow and associated screens in our low-fi prototype.





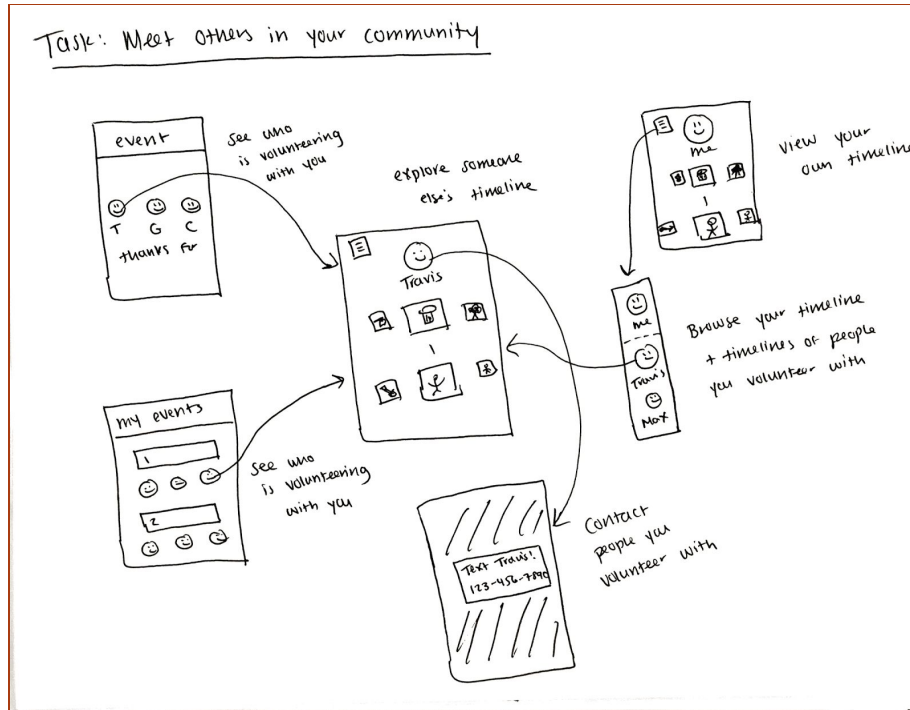


Figure 5c Low-fi prototype task storyboard for task 3: meet others in your community

## Medium-Fi Prototype

We tested our low-fi prototype on four people, and based on this usability testing, we made a number of changes in the transition to a **medium-fi prototype**:

1. The “discover new events” screen in our low-fi prototype was a scattered cloud of images. We found that this was confusing to navigate, so we changed this design to a scrollable grid of images labeled by category.
2. In our low-fi prototype, we had a separate event confirmation screen and a “my events” list view. Every one of our participants clicked immediately to the “my events” screen after signing up for an event, even though they’d just seen the event confirmation screen. This indicated to us that an event confirmation screen was redundant, and that we could simply show events in “my events” once the user had signed up for them.
3. In our low-fi prototype “memories” screen, we had a sidebar that expanded to allow the user to browse other users’ memories pages. Users found this sidebar confusing, so we eliminated it and decided to rely on event attendee chat heads for this functionality.
4. Finally, in our low-fi prototype, we made the user’s profile picture on his or her memories page clickable so that others could get his or her contact information. This wasn’t as intuitive as we thought it would be, so in our medium-fi prototype, we decided to include a distinct chat button on memories profiles.

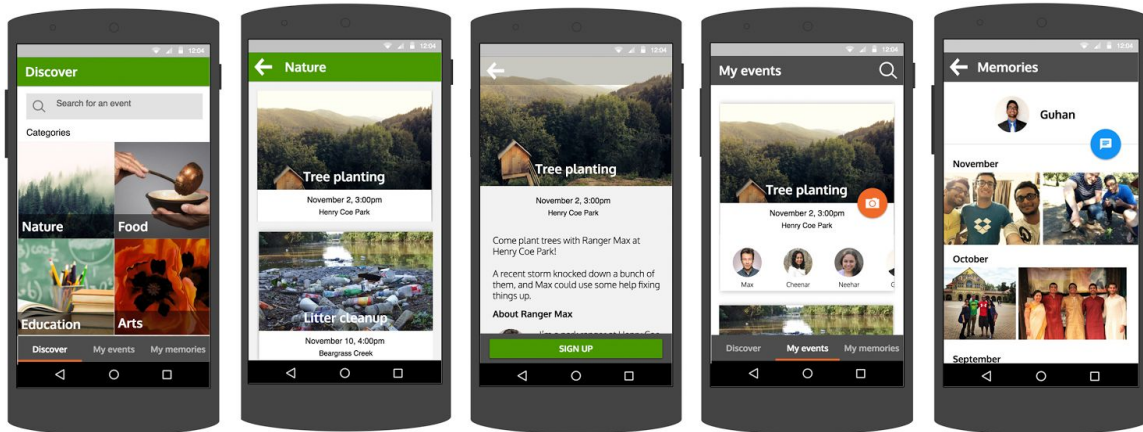


Figure 6 Overview of medium-fi prototype

## Major Usability Problems

The following outlines the severity-3 and severity-4 feedback we received from our heuristic evaluations and the appropriate corrections we made. The images show the medium-fi prototype screen containing the violation on the left, along with the corrected corresponding high-fi prototype screen on the right.

### H2-6 Recognition rather than recall, Severity 3

**Violation:** Logout functionality is difficult to find.

**Solution:** In our medium-fi prototype, we placed a logout button on the user's own memories page. This was difficult to find because other users' memories pages, while very similar, didn't show any logout option, which meant the user spent time searching through screens to find the logout functionality. After considering this feedback, we decided to remove login and logout functionality altogether, because they are not critical to the three tasks that we are currently focusing on.

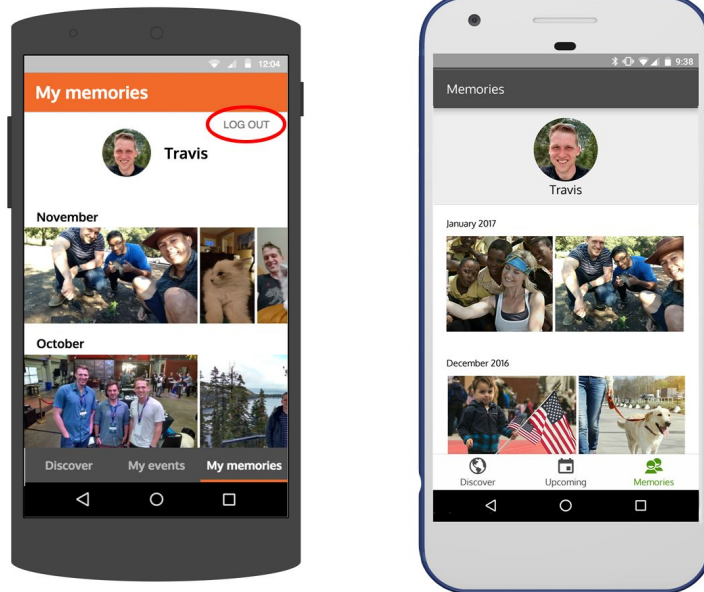


Figure 7a Adjustments made to the memories screen based on HE feedback

## H2-7 Flexibility and Efficiency of Use, Severity 3

**Violation:** Users can only add photos to memories that are associated with events.

**Solution:** The memories feature on Roots is intended to help people look back at the memories created and connections made at service events. Consequently, it is our intent that users are only able to associate photos with a particular event so that when they go back through their photos, the events are brought back to mind. As this was the intended functionality of our app, we decided not to make any changes.

However, a lower-severity comment noted that the icon we originally used for adding a photo was ambiguous, so we decided to change the icon to make the button's meaning clearer. We also received feedback that the term "my events" was quite similar to "memories" and didn't really show a clear function of the app, so we changed the section of the app to reflect only upcoming events. Finally, we decided to alter the cards to highlight the date and time of the upcoming event rather than showing extraneous information about location, organizer, and other attendees. The purpose for this was twofold: 1. to visually distinguish events that you have signed up for from events that you're browsing through, and 2. To give the upcoming events section more utility -- we realized from feedback as well as our own experiences that when people look at events they've already RSVP'd to, they're more interested in making sure they note it in their schedules than they are in browsing through the event. Thus, we decided to highlight date and time of upcoming events, and show more information about events within the browse and search screens.

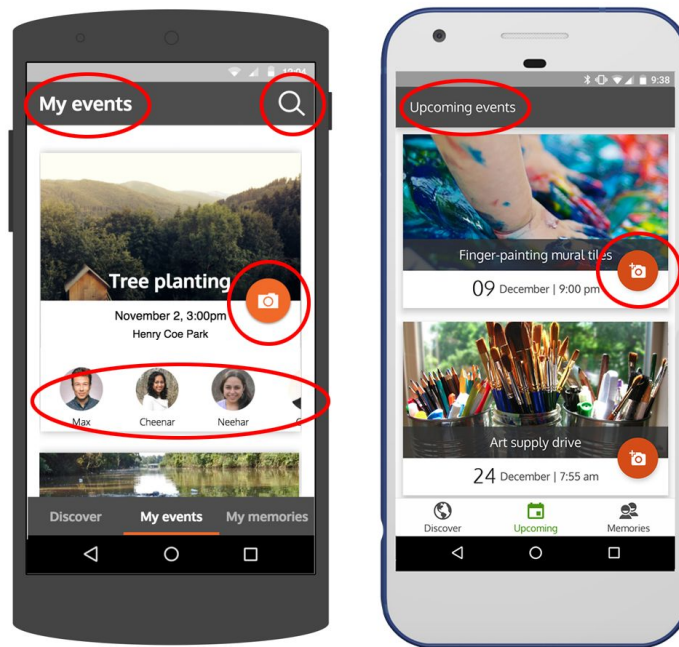


Figure 7b Adjustments made to the upcoming events screen based on HE feedback

## H2-7 Flexibility and Efficiency of Use, Severity 3

**Violation:** In order to access the search bar on the “discover” page, the user must scroll all the way to the top of the page. This makes the search feature difficult to use.

**Solution:** We chose to embed the search functionality into the title bar of the discover page. This way, it’s visible no matter how far down the user scrolls.

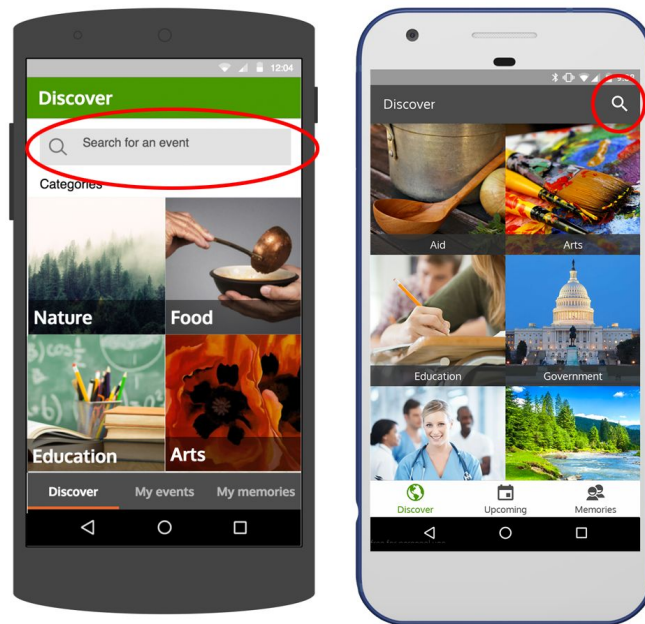


Figure 7c Adjustments made to the Discover screen based on HE feedback

## H2-7 Flexibility and Efficiency of Use, Severity 3 (noted twice)

**Violation:** Photos in the memories page are sorted by date and not by event.

**Solution:** This was valuable feedback and we carefully considered the benefits of sorting photos by date and by event. We decided to continue sorting by date, because the intended purpose of the memories page is to show an aggregate representation of a user's volunteering activity. We believe this is better shown through several pictures organized by general timeframe, rather than by very few pictures organized by several events. As time progresses, details like event names are quickly forgotten, so it would be more difficult to look back at older memories. However, it is intuitive to scroll back to a certain point in time to look at memories from that general timeframe.

### Miscellaneous

The remaining heuristic evaluation comments we received were of severity levels 1 or 2. Many of these led to small but important UI adjustments in our app. These include:

1. Changing fonts and header bar colors to be consistent throughout the app
2. Always showing chat heads (indicating who else is attending the event and who organized the event) on event cards instead of only showing them after sign up, because users may want to browse events by the people who are attending in addition to the event topic.
3. Allowing the user to delete past photos that he or she has shared

In our medium fi prototype, we chose to offload the chat functionality to Facebook Messenger because we didn't feel that having a native messaging system would add value to our app. However, we discovered that there is not an easy way to start new conversations between two people using the Messenger API. We thus decided to use an existing React Native chat library for our chat feature. Finally, due to implementation constraints, we slightly adjusted the interface for choosing between a photo gallery upload or taking a photo for the memories screen.

## Prototype Implementation

### Tools

Our high-fi prototype is an Android mobile application. We wrote it in JavaScript using React Native, Redux for React Native, and Exponent. We used the Genymotion Android emulator to run the app on our computers, GitHub for version control, and Sublime Text and Atom for editing.

Exponent made it easy for us to configure, test, and deploy our prototype, but it is still an early-stage system and occasionally had stability issues. React Native and Redux helped us write reusable UI components and manage most of our user data dynamically. GitHub was useful because it made it possible for us to work on different parts of the app in parallel. The Genymotion emulator was helpful, but was also very resource-intensive and less responsive than running the app on a mobile device directly.

### Wizard-of-Oz Techniques & Hardcoded Data

All events and event details (title, name, date, location, organizer, photo, etc.) are static and hardcoded. All users and user data (name, photo, memories) with the exception of the current user's added content are hardcoded. There is no login or logout functionality; the app's current user is fixed to a user named "Travis". The chats with other users are hardcoded. The ordering of events in the discover and search pages is by "relevance," but we don't actually have an algorithm that determines event relevance. User data (upcoming events and memories) are reset each time the app is closed. The interactive features of the app are functional: the user can sign up for any event, can dynamically add photos from gallery or take new photos, and the search feature really searches through the content.

### Future Steps

In order to narrow our focus on the tasks critical to our app, we abstracted away the event creation flow for organizers. Furthermore, there exist many successful event creation systems (Facebook events, Eventbrite, etc.) and we didn't think there was much room for us to be creative in this space. However, in order for the app to be fully functional, we would need to add a way for events to be created. Naturally, we'd also need to implement login,

logout and chat. There are also several features that weren't central to our core tasks, but might be valuable in a fully functional app including: push notifications for event reminders and location services for events.

## Summary

In building Roots, we explored the space of civic engagement within digital democracy. We found needs for empathy, face time, and positive feedback within communities. Through an iterative design process, we developed a solution for these needs; at each stage of the process, we thoroughly evaluated and revised our ideas and assumptions based on both user feedback as well as heuristic feedback. The design process we went through this quarter helped us make an app to meet the needs we found during our needfinding stage that is also easy and intuitive to use. At its core, Roots is designed to help people give back while meeting new people in their communities.