

CS 147 - Learning Studio - Assignment 5

Low-fi Prototyping & Pilot Usability Testing

The Team

Serena Wong Team Manager

Connie Li Design & Usability Testing

Jack Swiggett Software Engineering

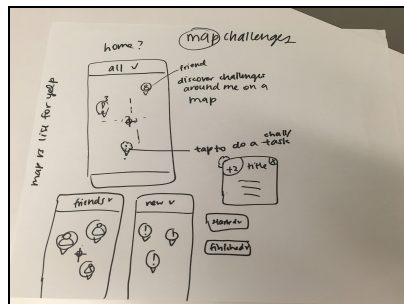
Our value proposition

Pelican | explore your new home

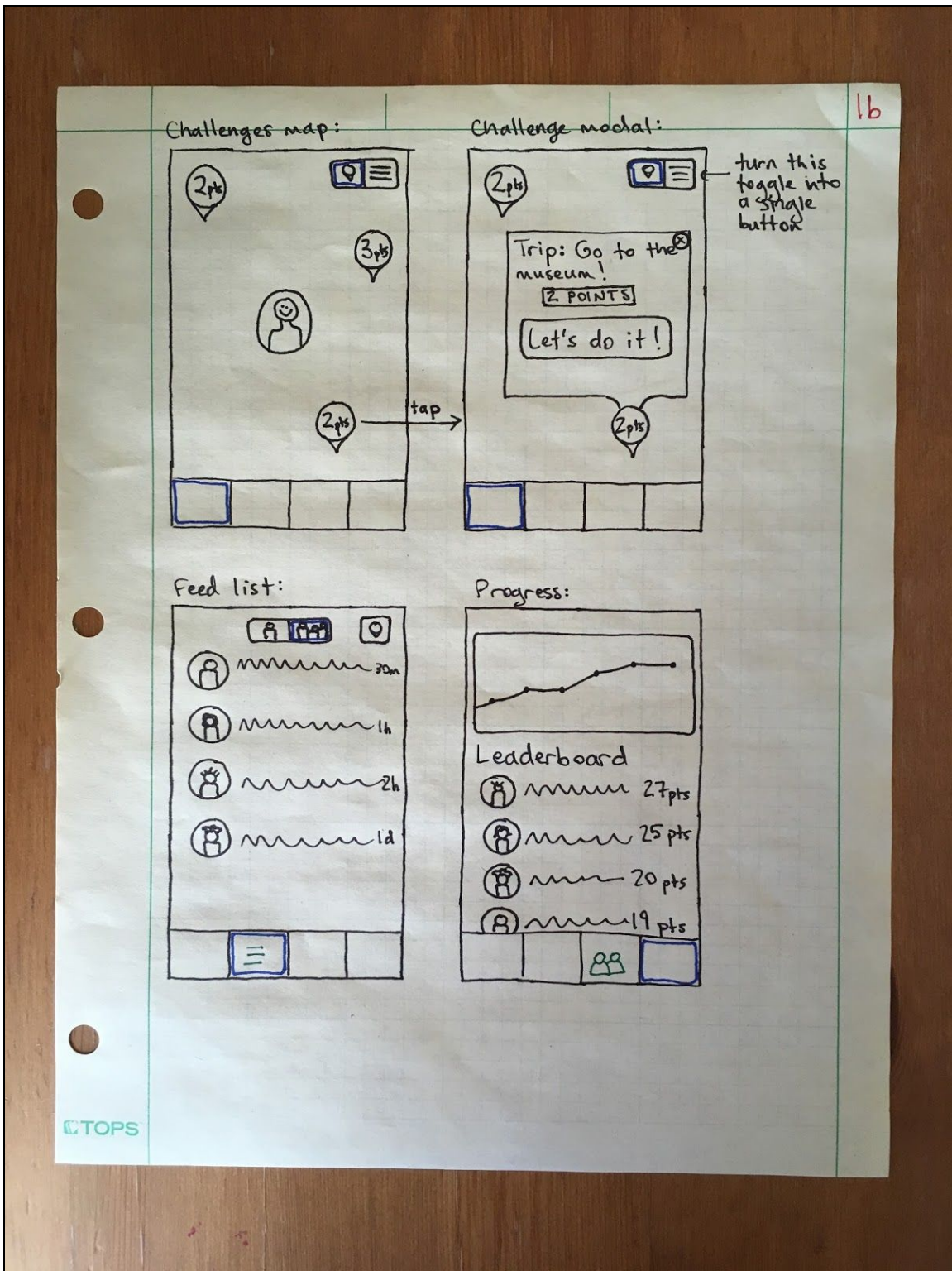
Introduction

People usually face hardships when they move to a new country. They are often uncomfortable or nervous interacting with locals and asking questions. They may have a hard time meeting people and developing a social circle. Pelican is an app that addresses these problems. Newcomers complete challenges that force them to get out and interact with locals. As they become more comfortable, the challenges become more difficult. The app also allows users to organize group challenges, where several newcomers meet to explore their new surroundings and develop friendships. Newcomers earn points for completing challenges, which facilitates friendly competition and encourages them to keep exploring.

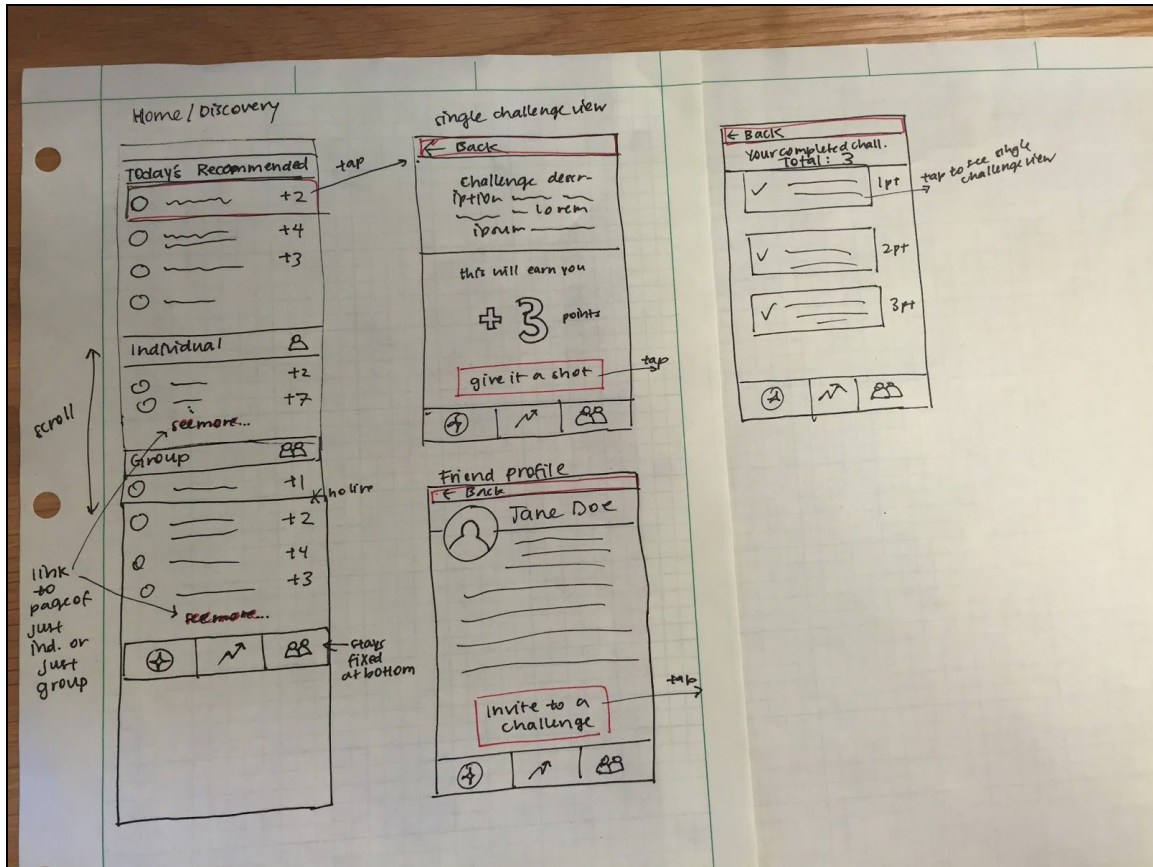
Sketches



Concept Sketches: Rough sketches and storyboards for many different design ideas, including multiple concepts for phone- and voice-based interfaces, as well as a smart watch interface. (Figure 1)



UI Sketch 1: A map and location-based interface for finding challenges and viewing completed challenges. (Figure 2)



UI Sketch 2: A nested, list-based navigation interface based around a personalized list of recommended challenges. (Figure 3)

Selected Interface Design

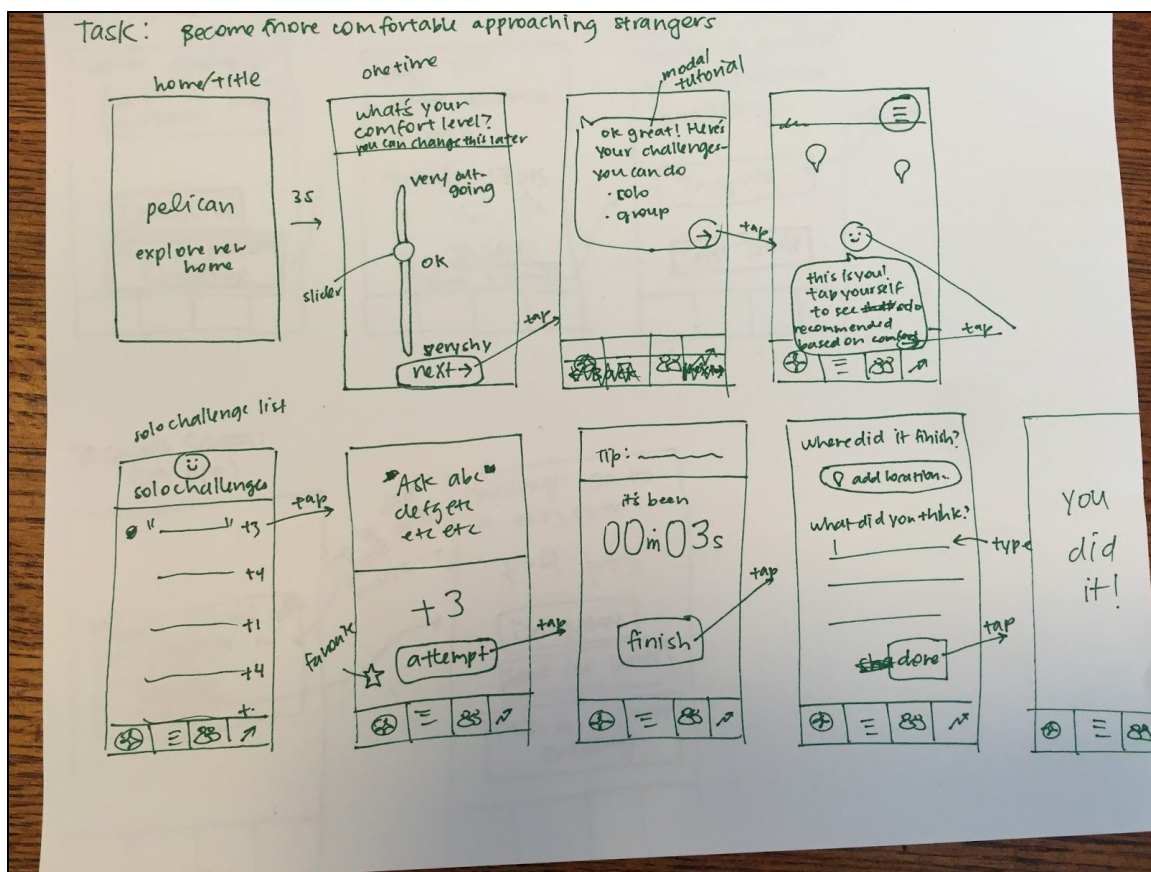
We brainstormed pros and cons for each of our two UI sketches. We liked that the map-based interface fit our theme of exploration, focusing on the physical space the newcomer is setting out to discover. We thought it would be an especially intuitive way to view group challenges, which center around visiting a certain location. We also thought it would be a unique and visually interesting design. However, we recognized that it might be less intuitive for first-time users, who would be unsure of what the map was displaying. We also thought it would involve a lot of screens and navigation by the user, since they would need to toggle the screen or tap on popup windows in order to view details about the challenges. It's also not a great way to display solo challenges, which are not location-based.

We thought our second UI sketch would be more intuitive for first time users, since challenges are clearly categorized and labeled. We thought a recommendation-based list, rather than location-based, would make it easy for newcomers to find relevant

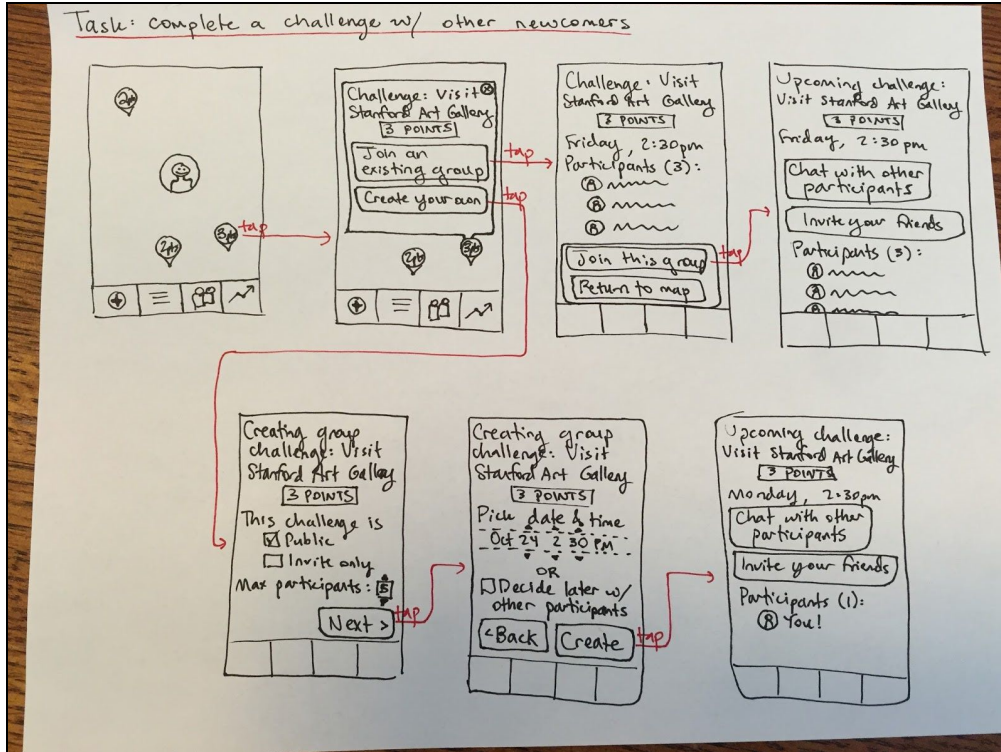
challenges, especially solo challenges. However, the interface seemed drab, and we didn't think it would motivate people to leave their homes and explore. We also liked having a map of completed challenges, which gives the user of the app a sense of progress (seeing the map fill up with markers) and lets them see challenges their friends have recently completed that they might complete too. This feature did not fit into the list-based interface. We therefore chose to move forward with UI sketch 1.

See **Appendix A** for our brainstorm of pros and cons.

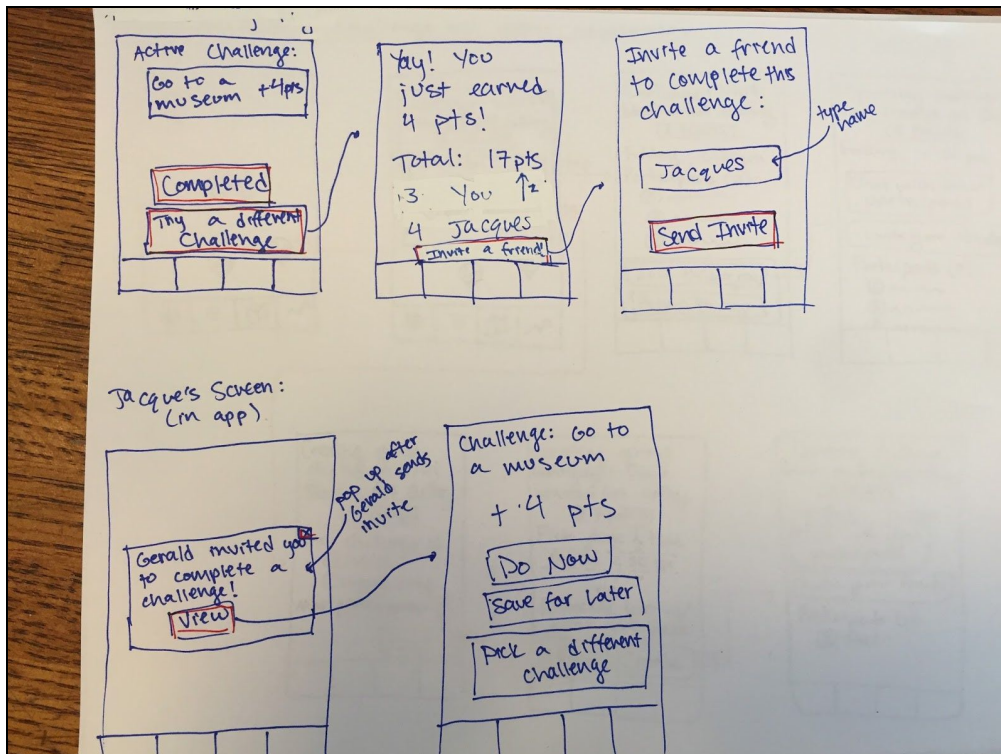
Storyboards using our selected interface



Complex task: Become more comfortable approaching strangers. (Figure 4)



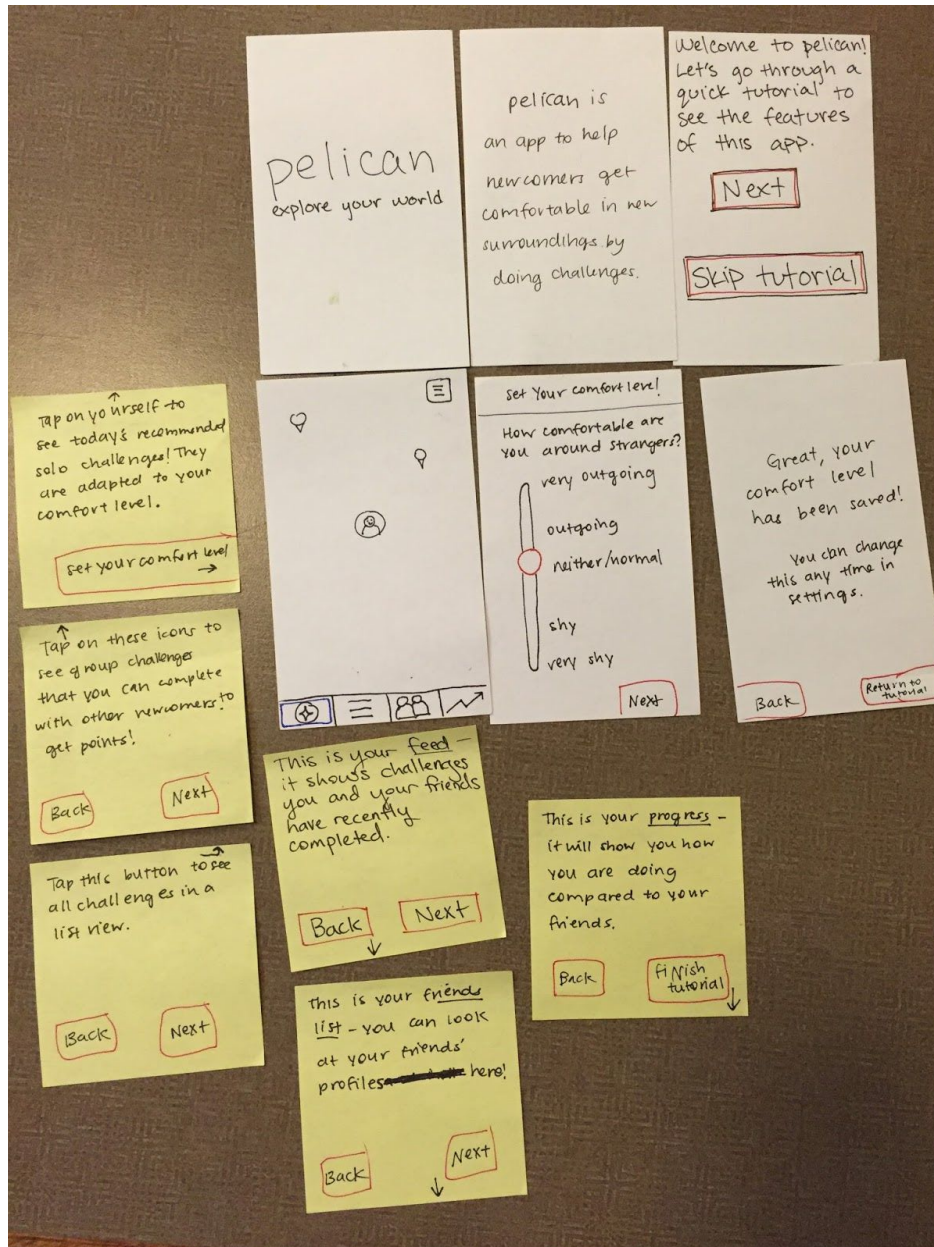
Medium task: Find other newcomers and complete challenges with them. (Figure 5)



Simple task: Earn points and compete with friends. (Figure 6)

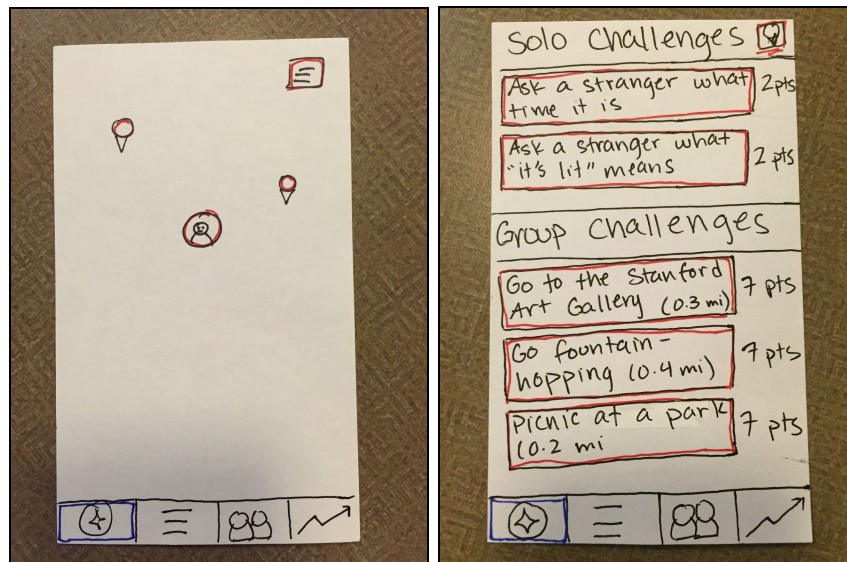
Prototype

Our prototype begins with an introductory screen and a short tutorial showing the participant how to use the app. We implemented the tutorial by putting post-its on the screens of the paper prototype, representing popups in the app that describe various components of the UI.



Introduction and tutorial, which used popup windows to give participants an idea of how to use the app. (Figure 7)

The main UI of the prototype is centered around four tabs; from left to right, they are called *Discover*, *Feed*, *Friends*, and *Progress*. The user can navigate between them using the icons at the bottom of the screen. After the tutorial, we move to the *Discover* tab, which shows a map of uncompleted challenges. Group challenges are location-based, so they are represented by pins on the map where the challenge would take place. An icon at the user's current location represents the user of the app, and tapping on it brings up a list of recommended solo challenges. The button in the upper right corner (☰) toggles to a list of solo and group challenges, also shown below.



Left: Map view for the *Discover* tab. (Figure 8)

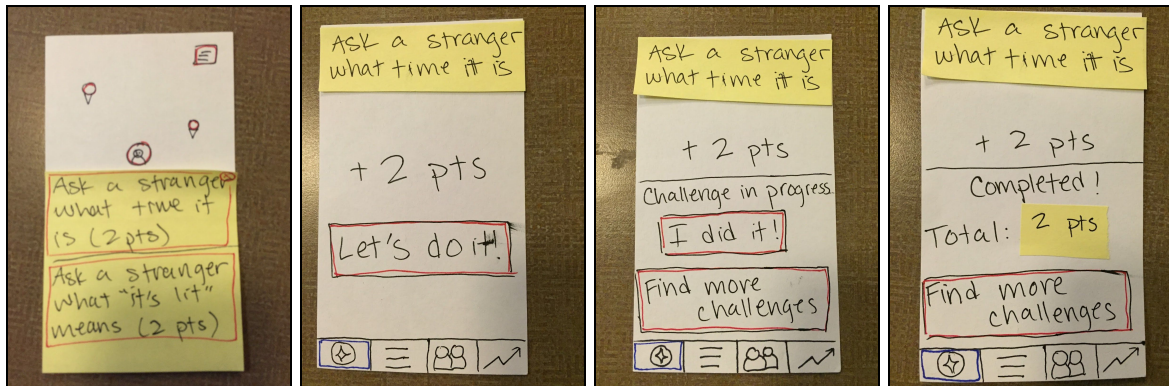
Right: List view for the *Discover* tab. (Figure 9)

The *Feed* tab has a similar map-based UI. Pins on the map show solo and group challenges that the user and her friends have recently completed, at the location where those challenges were completed. It also includes a list view, as well as a toggle to view all recently completed challenges, or only challenges completed by the user of the app. The *Friends* tab shows a list of the user's friends, allowing her to search for friends and view friends' profiles. Finally, the *Progress* tab shows a chart of the user's points over time, as well as a leaderboard so she can compare and compete with her friends.

We modified our tasks slightly to focus more on UI rather than the overall moving experience. We settled on four tasks, described below.

Task 1: Pick a solo challenge and complete it

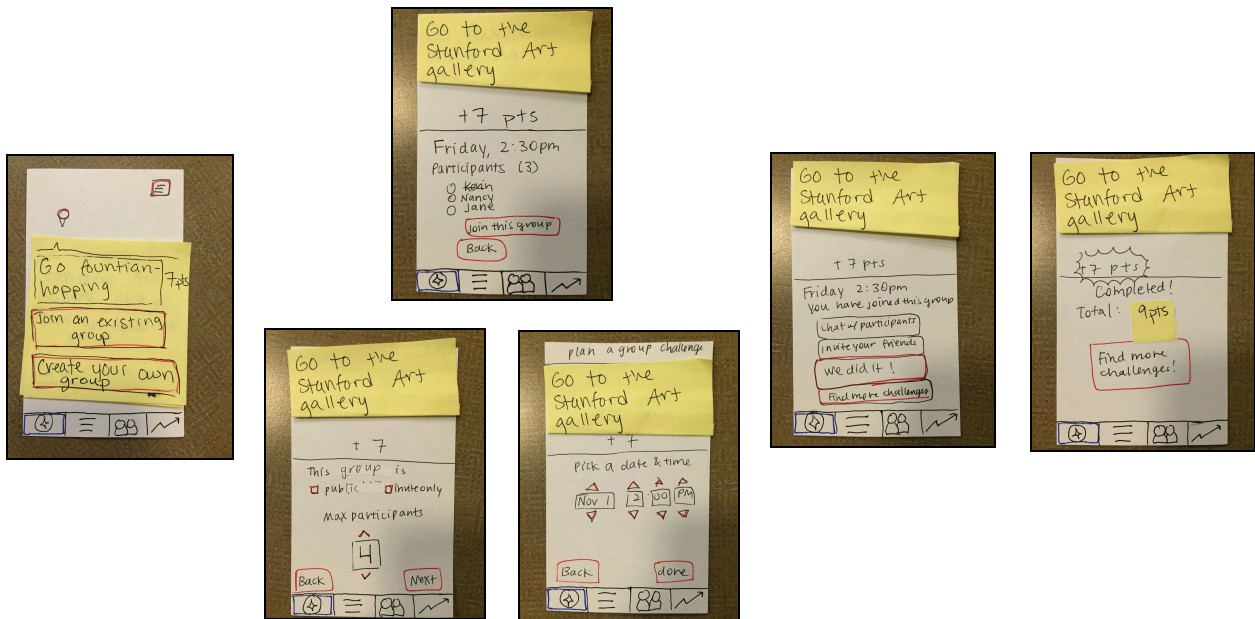
The user can either toggle to the list view of the *Discover* tab, or tap on herself in the map view, which brings up a popup showing recommended challenges. She taps on a challenge, selects "Let's do it," and then selects "I did it!" once she has completed the challenge. She sees the points she earned and her total points, and is invited to complete more challenges.



UI flow for task 1, if the user chooses to tap on herself to view solo challenges (Figure 10)

Task 2: Pick a group challenge and complete it

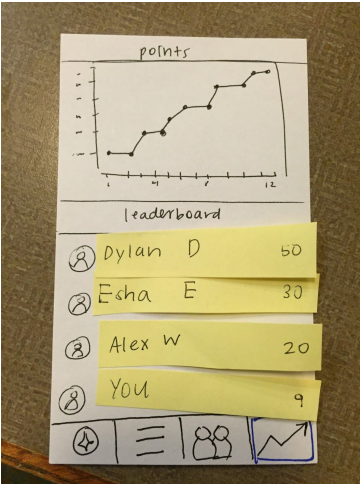
Once again, the user can toggle to the list view of the *Discover* tab, or tap on a pin on the map view, which brings up a popup showing a nearby group challenge. She can choose to join an existing group or create her own. If she creates her own group, she fills out some settings for the group challenge. Then she can go do the challenge, and tap "We did it!" to indicate that she completed it.



UI flow for task 2. The screen that is slightly above the others shows the flow if the user chooses to join an existing group. The two screens that are slightly below the others show the flow if the user creates a new group. (Figure 11)

Task 3: Check the leaderboard

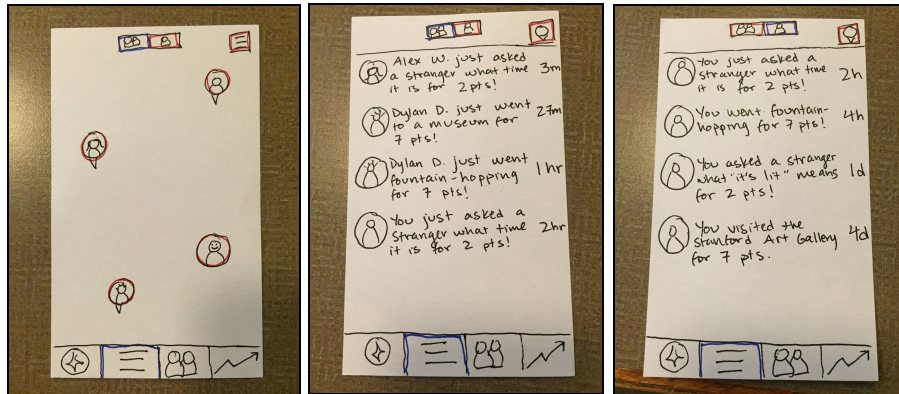
This task is simple; the user taps on the *Progress* tab in order to view the leaderboard.



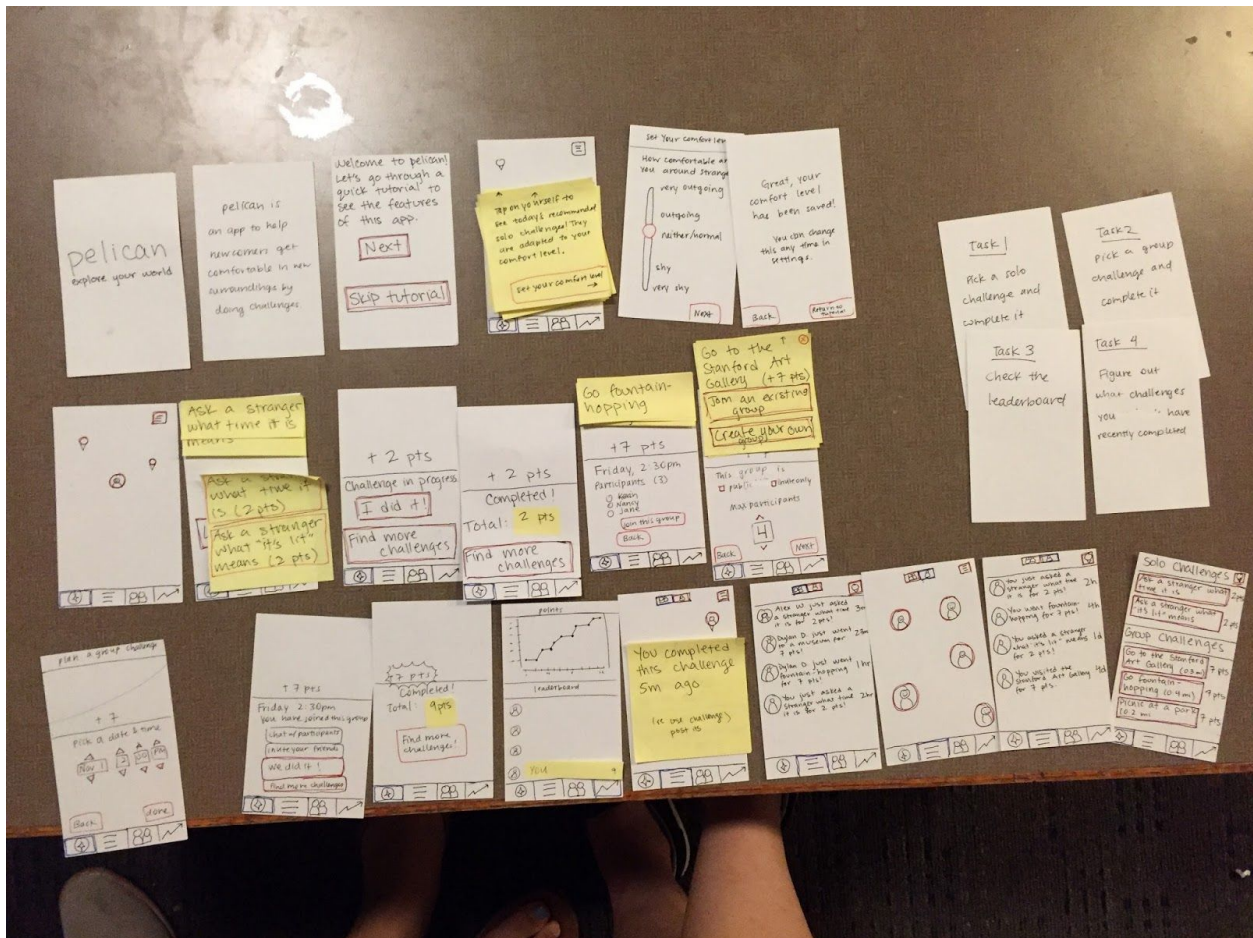
UI flow for task 3, i.e. the *Progress* tab (Figure 12)

Task 4: Figure out what challenges you have recently completed

The user switches to the Feed tab to view recently completed challenges. She switches the toggle at the top of the screen to view only challenges she has completed. She can do so in either map view or list view - the UI flow below shows her moving to list view and then toggling to view only her own challenges.



UI flow for task 4 (Figure 13)



This image shows all the screens of our prototype. (Figure 14)

Test Methodology

Participant 1 responded to our post on Nextdoor, and prototyped with us in Lathrop. He was in his forties, and he moved here from Russia a few months ago. Participant 2 prototyped with us in Storey. He is 23 years old, and lived abroad in Japan for 6 months during college, and we reached out to him personally. We prototyped with Participant 3, a current Stanford senior from China, in Gates; he was recruited also personally.

In general our testing environment consisted of a table with three seats, where the participant sat between Connie (the facilitator) and Serena (the computer), with the paper notecards laid out on Serena's side, while Jack took notes. We also filmed the participants' interactions with our prototype using a laptop facing the participant and the Mac app Photo Booth.

Our tasks were:

1. Pick a solo challenge and complete it
2. Pick a group challenge and complete it
3. Check the leaderboard
4. Figure out what challenges you have recently completed

For all experiments, our procedure was to use our paper prototype, made of notecards to be more durable than regular paper. Each screen simulated the screen of an iPhone. Serena, as the computer, swapped out the screens based on different interactions. To simulate modals, we used sticky notes that corresponded to specific buttons.

While prototyping, we paid close attention to how the users felt about the map layout, specifically how they interacted with two separate maps. Our concern was whether the app seemed too complex, with both map/list views under the same menu button, as well as toggling between the user and the user's circles. Our goal, especially after including the tutorial, was for an easy to use app, so we were also paying careful attention to whether the user knew how to find the correct screens to complete the tasks; this was measured in how quickly the users moved through the app, whether they needed to pause to remember or even ask how to get to a specific screen.

Test Results

Participant 1:

During the tutorial, he did not understand what the comfort level was from the explanation (Figure 7, first sticky note); only when he saw the sliding bar (Figure 7) did he realize what the comfort level represented. When tapping to see a challenge (Figure 10, card 2) during Task 1, he also voiced a desire for more information about the challenge--tips, advice, or suggestions on how to complete the challenge. Participant 1 hesitated when completing Task 2 while creating his own group (Figure 10); he was confused why we had designated the maximum number of participants rather than a minimum number of participants. Task 3 was completed quickly. When completing Task 4, found the feed tab difficult to understand, and what the Map view (Figure 13) represented.

Participant 2:

Participant 2 clicked through the tutorial as quickly as possible, and then chose to click around the app to understand how it worked. However, while clicking through, he noted that our tutorial was confusing; the phrasing of "Tap on x to do y" prompted him to tap the corresponding button, when in fact we planned for him to tap the "next" button. Once he felt he understood the layout of the app, he moved quickly through the tasks, remembering where everything was. While completing Task 1, he didn't realize he could tap on himself to see the solo challenges. His biggest confusion came from who his "friends" were--as a newcomer who just arrived, he would not have any friends yet, and would instead rather see fellow newcomers playing nearby that he could have the opportunity to friend. We were surprised when he tried to add his group members as friends right away during Task 2, which our UI couldn't handle. For Task 4, he wanted to see not just his graph (Figure 12), but his graph overlaid on his friends' graphs.

Participant 3:

Participant 3 immediately picked up on the fact that participants can "cheat" by simply tapping "I did it!" (Figure 10) without finishing the solo challenge for Task 1. During Task 2, he voiced the desire to check his calendar for availability when scheduling a group challenge. He hesitated for a long time on the Leaderboard page (Figure 12) during Task 3, trying to understand what the graph meant. For Task 4, he forgot about the Feed button on the menu bar, and had to ask how he might accomplish this task. Overall, Participant 3 disliked having more than one map, and wanted to be able to see his friends not just through the Friends directory or the Feed list view (Figure 13, right card), but also via the Feed map view (Figure 13, left card).

Discussion

Overall, we found that our user interface could use some streamlining. For example, we might combine our two map views. However, all participants liked our core concept of interacting with the local environment in a fun way while competing with friends. There was confusion around how a user would go about competing with anyone right away, as newcomers would not have friends right away, but the participants definitely enjoyed the social aspect.

We found that our users appreciated having different ways of viewing information, such as Map vs. List view, and toggling between your recent challenges vs. the recent challenges of your friends. The list view was especially useful in capturing a lot of information our participants were interested in.

Our participants also struggled with the similarity of different icons. For example, both the button to switch the List view and the menu button for the Feed are the same, creating confusion around why the two buttons lead to different things. Further, our location-based challenge pins in Discovery look similar to the location-based friend pins in the Feed, making it difficult for our participants to remember which type of pin displays what.

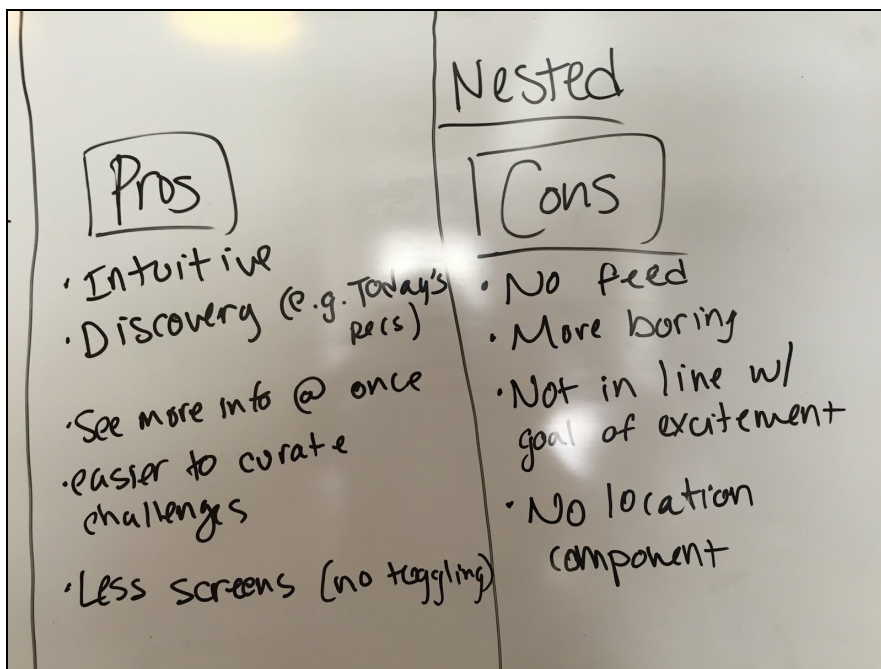
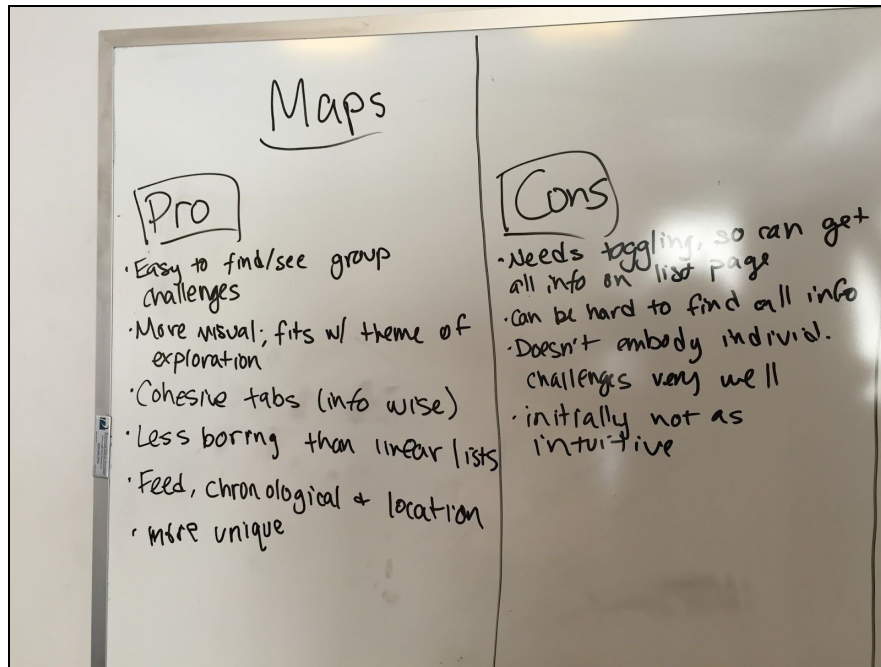
The biggest goal of our next improvements will be to eliminate confusion in the app. This will definitely mean differentiating between similar looking icons, as well as more clearly labeling the Leaderboard graph. We would also like to consolidate the number of buttons and screens available to our user, so as to avoid overwhelming them.

Our prototyping did not allow us to test out participants' timeline of completing challenges; for the sake of time and convenience, we told our participants to imagine they had just completed the challenge. As such, we will need to add additional flows for when a user exits the app, and how they would find active challenges upon coming back.

Appendices

Appendix A

Pros and cons of our two UI sketches.



Appendix B

Consent forms for our three test participants.

Consent Form

The Pelican 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 Pelican. 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 (Serena Wong, Connie Li, Jack Swiggett) or with Professor James Landay, the instructor of CS 147.

James A. Landay
CS Department
Stanford University
650-498-8215
landay@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 Pelican 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 НИКХАЛ МАТАПОВ

Participant Number 1

Date 26/10/16

Signature [Handwritten Signature]

Witness name Connie Li

Witness signature [Handwritten Signature]

Consent Form

The Pelican 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 Pelican. 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 (Serena Wong, Connie Li, Jack Swiggett) or with Professor James Landay, the instructor of CS 147.

James A. Landay
CS Department
Stanford University
650-498-8215
landay@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 Pelican 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 Edgar Bai

Participant Number 2

Date 10/20/16

Signature [Handwritten Signature]

Witness name Connie Li

Witness signature [Handwritten Signature]

Consent Form

The Pelican 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 Pelican. 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 (Serena Wong, Connie Li, Jack Swiggett) or with Professor James Landay, the instructor of CS 147.

James A. Landay
CS Department
Stanford University
650-498-8215
landay@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 Pelican 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 Sherwin Xia

Participant Number #3

Date 07.27.2016

Signature [Handwritten Signature]

Witness name Connie Li

Witness signature [Handwritten Signature]