

CS 147 - Mixed Reality Studio (Emily Tang)

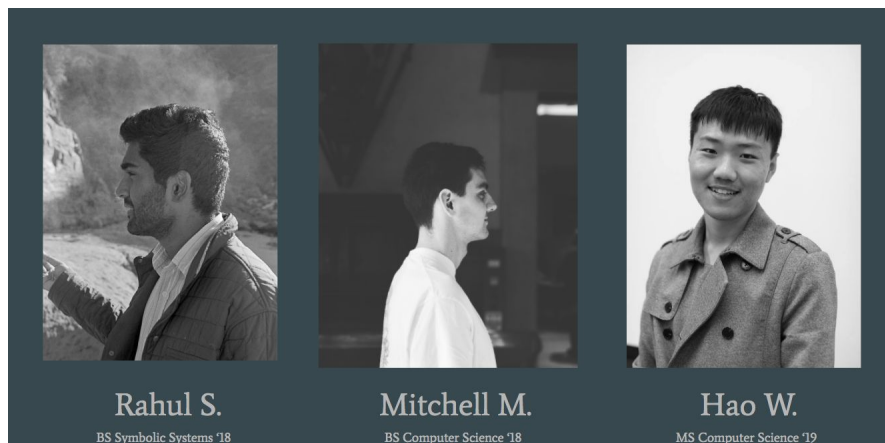
Assignment #8: Hi-fi Prototype

12/5/17

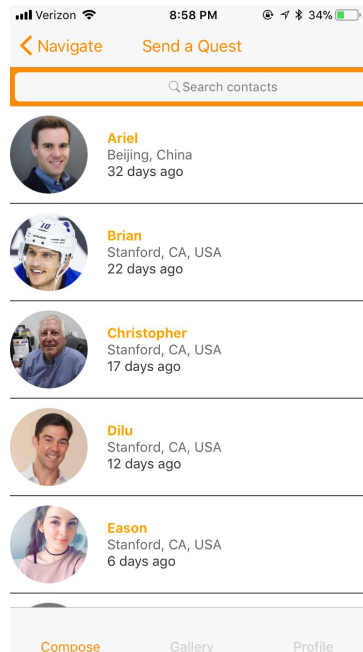
I. Header



Quest: Make Communication Meaningful Again



II. Problem and Solution Overview



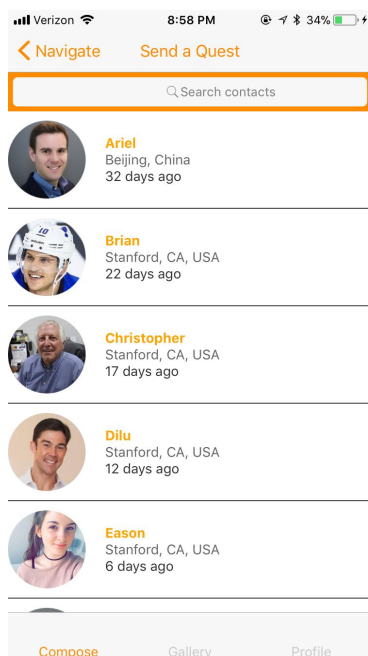
In the age of effortless communication, we paradoxically communicate more often but with less value. Quest is a mobile app that works to fix this problem of meaningless communication by delaying the gratitude of receiving a message and gamifying the experience of finding it. A user can send a Quest to a friend at a specified location, and the friend receiving the quest is navigated through AR to the message, which can be a photo, letter, video, gift card, or more.

III. Tasks & Final Interface Scenarios

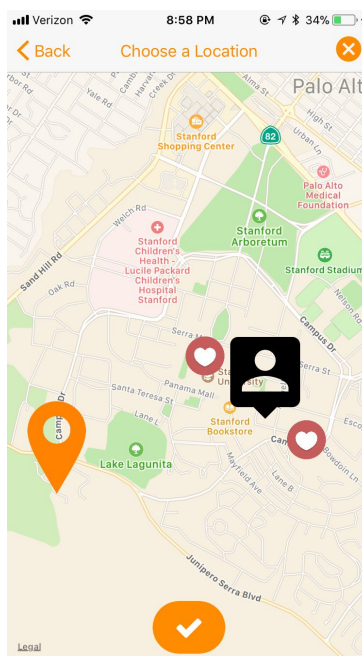
We chose to organize our tasks in chronological order as opposed to by complexity, because our Task 3 depends on the use of Task 2.

A. Send Quest (Medium)

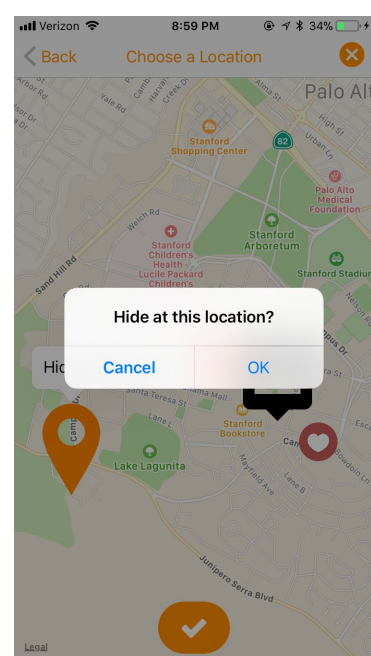
Since our app is built on communication with friends, it is important for one person to be able to send a “Quest” to another.



1. Tap a friend on home screen



2. Tap location on map



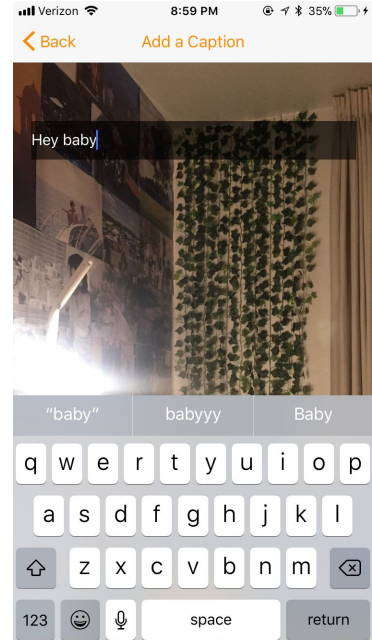
3. Confirm location



4. Phone opens to camera



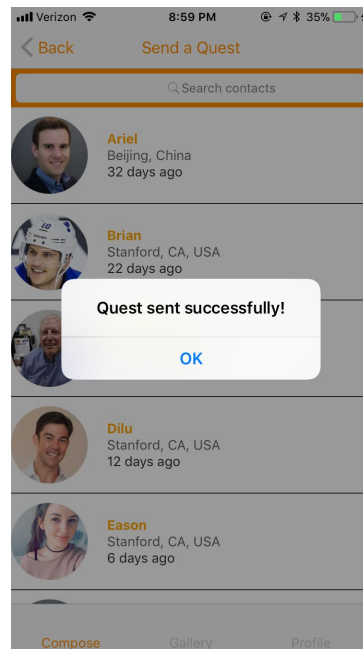
5. Add caption if wanted



6. Type caption



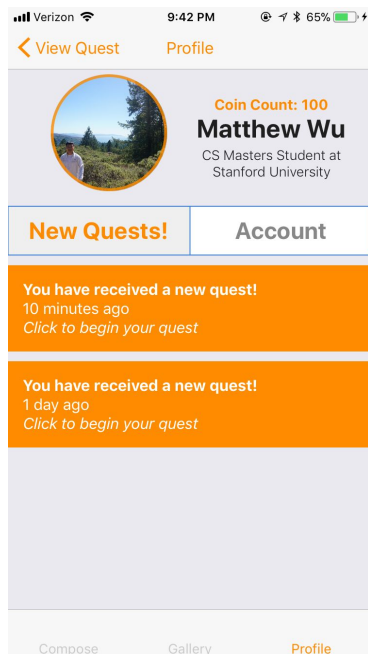
7. Click checkmark



8. Receive notification of completion

B. Navigate To Location (Hard)

Once a message has been left, the receiver of the quest needs to navigate to the location. Our approach heavily uses augmented reality.



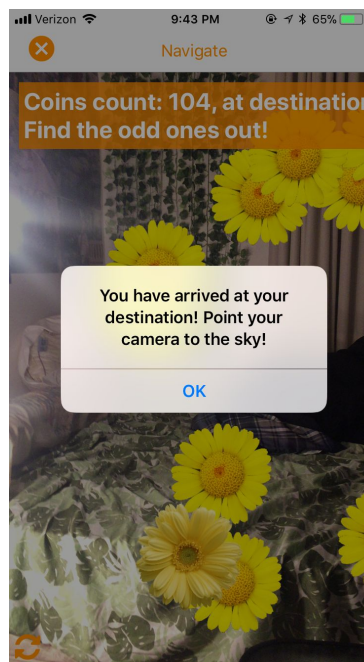
1. Go to profile to see notifications



2. Follow coins to reach gold star



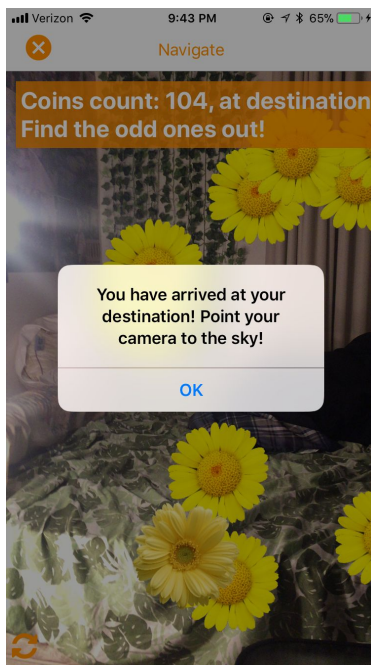
3. Keep tapping coins to reach



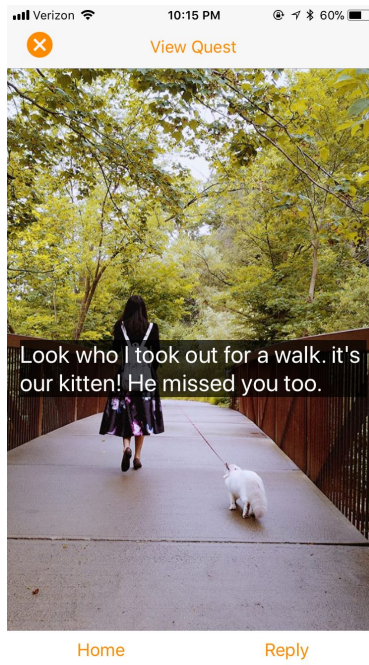
4. Tap last coin and arrive

C. Open The Message (Medium)

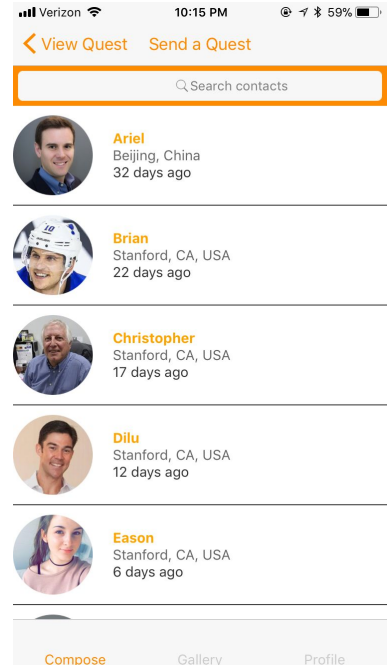
The final part of our app is opening the message itself, rewarding the receiver for her journey.



1. Point screen upward



2. Receive the message

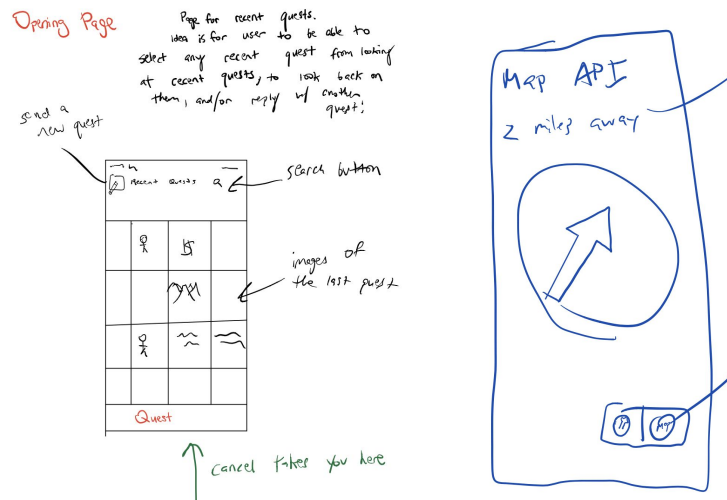
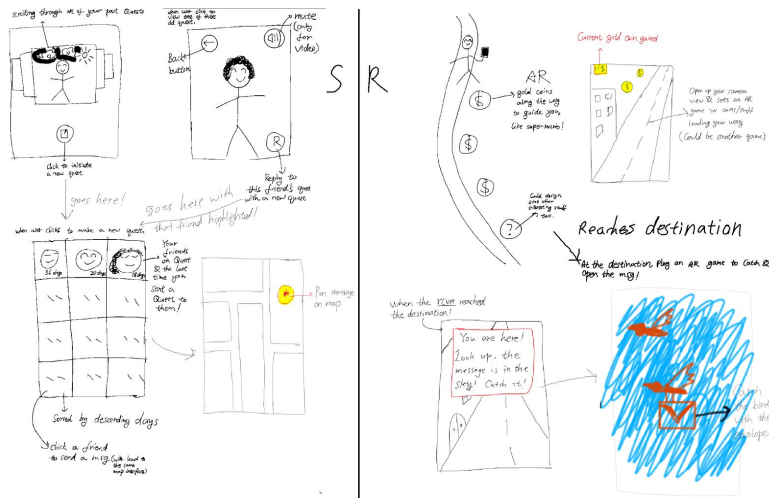


3. User can navigate home

IV. Design Evolution

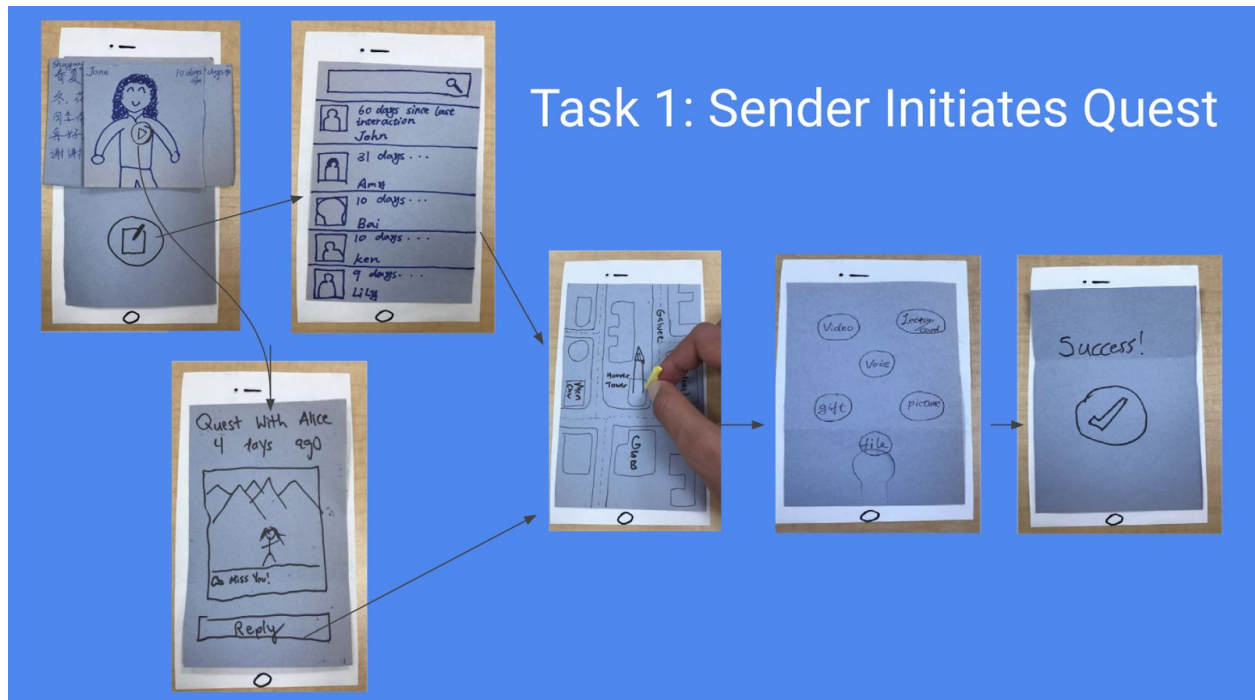
The design of our application evolved drastically from our first sketches at the start of the quarter, and each round of the design process brought us different feedback from different sources.

A. Initial Sketches



Our initial sketches varied in ideas and features. Several of the premature sketches did not include augmented reality, nor a gamified experience, and focused on the act of traveling to a destination to receive a message. There were also several different approaches to how to navigate a user to a destination. While one sketch proposed a compass-like interface, others proposed using Google Maps API, or other alternatives.

B. Low-Fidelity Prototype

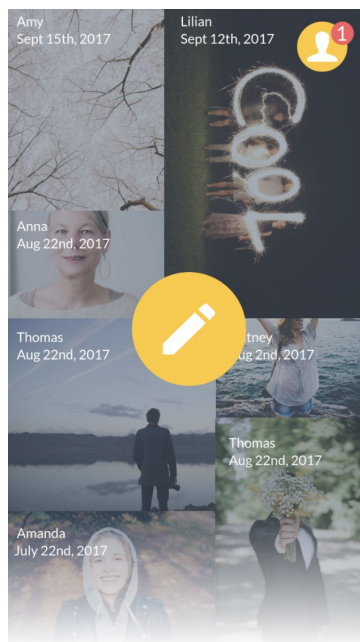


Our low-fidelity prototype saw refinement from our initial sketches, however lacked important features that would later be implemented. After discussion of our initial sketches and a team vote, it was decided that users would benefit from a gamified experience in which augmented reality guided them to their destination. Our initial sketches also included a “grid-like” view of contacts, which we thought would be a change of pace for people, however realized a list to be a better design decision. It was during these design stages as well that we realized that adding in functionality to send more than just a photo in your quest; but also video, audio or even a gift card added versatility to our platform. This resulted in a redesign of our media selection screen, where we decided on a scattered button layout.

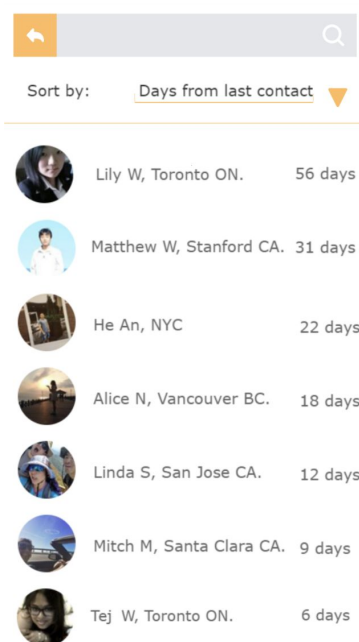
C. Medium-Fidelity Prototype

After listening to feedback from initial testers of our low-fidelity prototype, it was clear that many were necessary for our medium-fidelity prototype. This was also the stage in the design process in which we moved ideas from paper to computer, which greatly helped us imagine our product through the eyes of an actual user. One issue we came across with testers was our home screen. Testers were confused by the recent “Quest slider.” Because of this, we decided to redesign to a brick-layered layout in which the “initiate Quest” button lay right in the center. Though not evident in our low-fidelity testing, we knew it was necessary to also include “back” buttons on each screen in which a user could return to the previous screen if they needed to. This greatly improved the ability to navigate through our application.

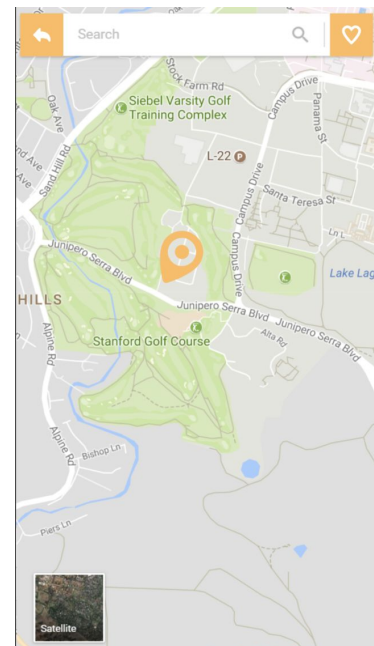
One of the main issues our peers found with our prototype was the difficulty in navigating from one place to another within the app. Though our addition of “back” buttons in our medium-fi prototype improved navigability, it proved to not be enough for users to truly move from one place to another in an appropriate time. For example, if a user wanted to return to the home screen, there was no way to without repeatedly pressing “back” buttons until arriving there.



1. Home screen of app



2. Contact list



3. Picking the location

V. Major Usability Issues

Analyzing our heuristic evaluation and presenting to our studio provided us with invaluable feedback on our design, and it was in between our medium-fidelity prototype and our high-fidelity prototype when many of our most important design changes were established. Below are all of our reported violations of severity 3 and 4, along with further elaboration on how we addressed them.

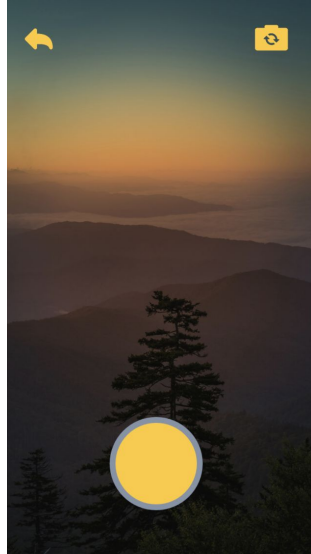
A. Violations of Severity 3

1. **H6:** *“Although the main page has a very interesting interface for displaying previous quests, there is no way of seeing if you ever replied to their quest or not. Perhaps there should be some symbol to show what the last action was with that person. Similar to how snapchat has a sent message, read message, message was screenshot icon that people recognize and realize okay I sent the last quest to this person.”*

Response: We discussed this thoroughly, and deemed it a good idea to implement if time permitted. With the small amount of time included to build the interface from the ground up, the addition of these useful, but tedious buttons is something we'd love to add to the UI if we decide to move forward with the project after the end of the class.

2. **H3:** *“Once a picture is taken, the picture itself doesn't appear for the user to view before deciding whether to retake it or not. This could be fixed by changing to an interface like Snapchat's that shows the picture just taken and has an option like an 'x' in the corner of the screen to go back to the camera page.”*

Response: We agreed with this violation, and deemed it very important to change for our final interface. Our high-fidelity prototype includes this functionality, which gives a user an extra level of control over the content they are including in their Quest.



Before: No ability to review photo taken

After: Added ability to review taken photo, and redo if needed.

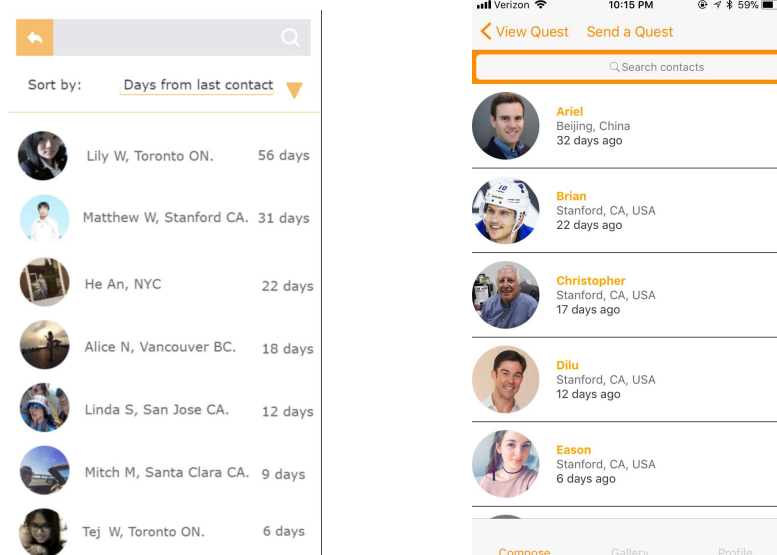
- H4:** *“There’s no clear way to listen to the voice message that you just recorded in the send message step. Most of the time when you write or record a message you want the ability to go over what you said before sending it. Most voice recording apps use the conventional ‘play’ button to show that you can listen to the message that you just recorded, so the designers could adopt this in the app.”*

Response: Including use of audio and video in our final implementation was something we imagined Quest having during all stages leading up to our final high-fidelity prototype. However, like with the first severity 3 mentioned above, incorporating the functionality into the interface with such a small time scale was not feasible. Many attempts were made but as a team we decided it was too much of a hassle, and unfortunately we had to leave out audio messaging.

B. Violations of Severity 4

1. **H3:** *“Upon opening the app through the notifications, users only have the option to start the quest even if the user just wants to look at the apps homescreen. There should be some button or method that allows the user to go to the home page after seeing this notification and opening up the app through the notification.”*

Response: To better navigate through our app, we added a bottom navigation bar. The navigation bar has three options: Compose, Gallery, and Profile. This way, even if someone starts a quest, the person can return to the home screen.

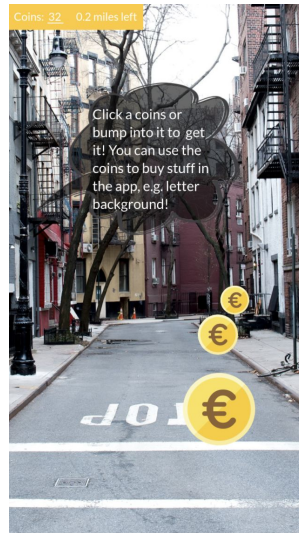


Before: No bottom navigation bar

After: Navigation bar to easily move through the app

2. **H3:** *“There is also no way to escape from the AR setting when finding a quest to go back to the homepage. If a user decides they do not want to walk the distance to find the quest, they have no way of backing out to the main screen. A simple sliding screen feature similar to how snapchat changes from camera to app could fix this or just a home button on the AR screen.”*

Response: We added an exit button in the top left corner to leave a quest once it has been started.

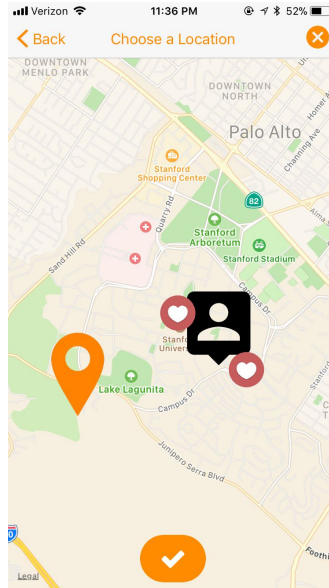
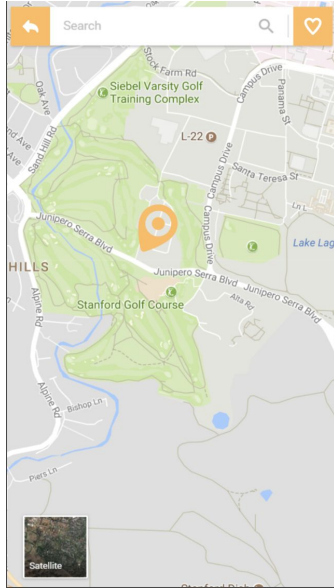


Before: No exit button

After: Exit button in top left corner

- H5:** *“When on the map screen, I feel as though I could zoom far enough out so that the map is very large and if I dropped a quest it would be the size of San Francisco and wouldn’t know exactly where to place it in the real world. Maybe you can maximize how far the map can zoom out (but this may lead to speed issues when trying to set a quest very far away). Another option is when you place a quest another small window pops up that shows the exact location the quest will be placed zoomed in.”*

Response: For our location feature, you can zoom into the map at incredible detail. It also begins at a much smaller view than city view. We did not want to max out how far the map can zoom, because the user should be able to put a Quest in many locations. However, with the zooming in feature, there is great ability to put a Quest in a specific location.



Before: Static map, not much detail

After: Very fine grain zoom in features on the map

4. **H3:** *"It doesn't seem as though a user can delete or decline requests. What if a friend decides to spam the user with 100 quests all placed on different parts of the Earth. The user should be able to easily delete unwanted quests and deny/block users so they can stop spamming."*

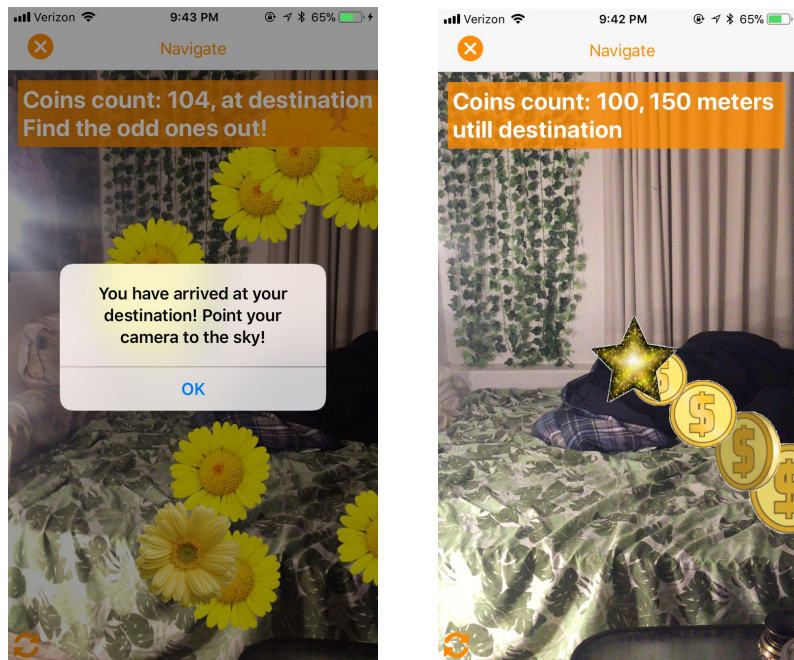
Response: We did not feel like this was an important feature to implement just yet. Since at first the people using Quest will be small, it will require a lot of effort on someone's part to spam the network. This will be an issue tackled when we scale.

VI. Prototype Implementation

For tools, we used React Native, EXPO, and ES6. We used React Native for our approach because it allowed us to build an Android and iOS application at the same time. Since one of team members had an Android and two had iPhones, this allowed us to collaborate. At the same time, React Native meant there was not as much heavy development IDE such as in apps like Xcode or Android Studio. Expo was a free and open source toolchain built around React that we used as well. Expo also had an app we could download to test our implementation.

However, there were some downsides to using React. None of our team members knew how to use React, so the learning curve was steep. At the same time, the AR is poorly optimized in React, so we had to fake the opening on of the message using a Wizard of Oz technique and animation. We also used the Wizard of Oz technique for AR navigation, as this proved to be very complex to do.

In terms of hard coded data, all user information was hard coded, so the Profile page, the Contact List, and the user info were all hard coded information. The AR animation was hard coded as well. Finally, in terms of what's missing, we still need to implement real AR, a signup and sign in feature, as well as a way to add friends from your contact list.



Wizard of Oz technique used here in the AR parts

VII. Summary

In summary, our app leverages augmented reality to let users rediscover the joy of opening a letter in the mail. From our initial sketches, the app has evolved to include much better navigation and design. We've added a bottom navigation bar, better map functionality, more realistic AR, as well as other tweaks. We used Hack React to make the app, meaning it can be used on both Android and iPhone, but still have some Wizard of Oz techniques we need to make into reality. Thanks to our TA Emily Tang for all the guidance and help.