CS W4170 Assignment 2

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Team Name: Photobomb

Members:
    Sophie Fader
    William Falk-Wallace
    Karen Nan
    Nilkanth Patel
    Deepika Tunikoju

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Part 1. Prototyping

General Approach to the Assignment

Our group aimed to develop a prototype that was simple, with as few "screens" as possible, maximizing space by modularizing elements of the design while keeping the user completely aware of his or her position in the process of viewing, sharing, or copying images. We knew the design had to be barebones in order to eliminate confusion. The process unfolded in four stages: individual brainstorming, collective brainstorming, collective sketching, and finally prototype building. We were primarily inspired by DropBox, Instagram, iPhoto.

Individual Brainstorming
We began by meeting and sketching potential interfaces on our own, incorporating ideas from applications we've used previously on our phones, tablets, and computers. We then went around and explained each of our designs to one another, selecting elements of each individual's design that we, collectively, liked and would be happy with implementing in our final design.

Collective Brainstorming
The second round of individual brainstorming was done with the hope of incorporating those elements we liked from each others' designs into our own by developing a second version of our initial interface design with those added elements. The goal of this second round was to develop interfaces that amalgamated the core elements we enjoyed to try to reach a consensus on what the final design should look like.

Collective Sketching
After round two, we again explained our designs to the rest of the group. The next step was to come together and sketch our interface collectively, beginning by taking the individual's design we believed was closest to what our final should look like, and incorporating the positive elements from everyone else's into that sketch. See figure 1 for what we came up with.

Original Personas and Use Cases:

1. **Gregory**
   a. <u>Persona</u>
      Gregory, 82, is a father of three and a grandfather of six. He spends most of his time on his porch, or watching the news in his living room. He enjoys spending his weekends at either his son or daughter's house, playing with his grandchildren.
   b. <u>Use Case</u>
      Gregory is with his grandchildren, who are seven and ten respectively. They both have tablets and recently went on a trip to Williamsburg, Virginia, where they took photos of themselves dressed as soldiers in the American Revolution. Gregory wants to see these photos and save them on his iPad so he can view them at home. His grandchildren have a Nexus 7. He connects to the same WiFi network as his grandchildren and starts up the app on his iPad. The grandchildren also start up the app on their tablet. Once both are on the network, one of the grandchildren opens up their photos from the vacation and drops them on a new album, titling it "Kid Soldiers." Then, they drag the new album from their screen to the avatar of their grandfather on the menu on the left. Now, Gregory can go into the app, find the avatar for his grandchild on the menu, tap it, and see the album they have just shared with him. He opens the album and drags it to his own avatar. Now, the images are copied to his tablet, and he can view them whenever he likes, even if he isn't connected to the Internet. Now, Gregory continues playing with his grandchildren.

2. **Olivia**
   a. <u>Persona</u>
      Olivia is a 37 year old librarian and mother to a 6 month old baby. She works with research technologies daily in her job and is comfortable with computers. She lives in North Carolina and loves

the outdoors.

   b. Use Case

       Olivia has a new baby boy and tons of pictures him that she wants to share. At lunch with a few girlfriends she shows them pictures of her baby on her iPad. Her friends want to save the pictures onto their own tablets as well so they can share them with friends and family. They connect to the same WiFi. Her friend Courtney has a Samsung Galaxy. She opens photobomb and sees that Olivia is listed as near her. She clicks on Olivia's profile and drags the album called "Baby Pix" into the navigation bar prompting the creation of a new folder called "Livi's Baby"

3. **Richard**

   a. Persona

       Richard is 23, just graduated College and is working at a bank in New York. He works long hours and plans occasional dinner-dates with his girlfriend, whom he lives with, when he has the time. He enjoys brainteaser and he plays Poker every week or two in his diningroom with a friend (also a banker) from his High-School; these games always occur late at night, once he and his friend have finished their work days. His parents live down the block, so he has dinner with them most Sundays.

   b. Use Case

       Richard just went on a trip to a train manufacturers in North Carolina with his team from the bank to assess and help close a deal. Inside the factory, one MD, Jon, took many photos with his camera-phone both to use in the assessment presentation/proposal at work the next day and because the half-constructed trains and the factory processes were fascinating and cool. Richard is helping Jon with the presentation; he also didn't think he would be allowed to take pictures inside the factory, so he didn't bring his camera -- he would love to have and share the pictures of the trains being built with his friends.

       In the airport waiting for their flight home from NC, Richard and Jon are discussing the presentation, and they realize Jon should make sure Richard has the photos so they can both work on the flight. Richard pulls out his laptop, and Jon opens the PhotoShare app on his phone. Jon uploads all of his photos from that day into a folder called *"Lionel OCT-10-13"* and shares it with Richard. Richard copies them to his saved folders and renames them *"Jon's Train Trip Pics."*

       They board the flight. Richard spends the first few minutes preparing the presentation then goes into the app to decide what pictures he might want to use. He opens the app again and begins to organize the collection of pictures into two folders: the original, and a second, *"Lionel Assessment Presentation Photos."* He goes through the album, selecting photos he might use and moves them to the new folder. Once done, he downloads the second, work-related album and begins to use the photos in his slides.

       In a couple days he is playing poker with his High-School friend Tom, telling him about the trip. Tom takes out his tablet and opens the app while Richard runs to the other room to share the album with him. Tom flips through the pictures and copies a couple of the cooler-looking ones to his own album, while they keep playing poker.

4. **Stephanie**

   a. Persona

       Stephanie is a 14-year-old from suburban New Jersey who is constantly texting her friends and never seems to put down her phone. She absolutely needs the coolest, latest new trends, and she will kill for VIP front-row Justin Bieber tickets. Her parents and relatives try not to spoil her, but she knows if she begs for it enough times, she'll usually get that latest purse (especially considering how her grades have been decent lately). Her parents try to limit her use by taking away her phone after dinner, but she continues to chat using her laptop, which she "needs" for homework. She is going to a 2-week summer camp in upstate New York for the first time this summer.

   b. Use Case

       Stephanie just came back from a 2-week summer camp in upstate New York where cell service is limited. Her phone contains over 200 photos, all of which are already accessible by the Photobomb app. Her parents want to see her photos and asks her to send them to view on a tablet device. Stephanie creates a new album and selects the individual photos to add. She then shares this with her parents.

5. **Ashley**
   a. <u>Persona</u>

   Ashley lives in Seattle. She normally hangs out with Vikram, Phoebe, Barney and Kevin. They all love travelling. They spend their weekends exploring new places.
   b. <u>Use Case</u>

   This weekend Ashley, Vikram, Phoebe, Barney and Kevin went to Rattlesnake ledge hike near Seattle. It was a beautiful drive from the city to that 1160 high point. Each one of them, gadget and photo enthusiasts, have clicked a lot of pictures on their devices. Over the dinner table that night, while waiting for their orders to arrive, they start viewing the photos they have taken that day. They are all connected to the same restaurant Wi-Fi. They open the application on their devices, and drag and drop the pictures they want to share from their local album to a new album and share it with the rest of them in a single click. All photos on all devices are shared and viewed and their orders arrive.

Final Use Cases:

1. **Will Visits His Grandchildren**

   Will is with his grandchildren, who are seven and ten respectively. They both have phones and recently went on a trip to Williamsburg, Virginia, where they took photos of themselves dressed as soldiers in the American Revolution. Will wants to see these photos and save them on his iPad so he can view them at home. He connects to their home WiFi network with his grandchildren and opens up the app.

   One of the grandchildren, Deepika, selects their photos from the vacation and creates a new album, titling it *"Soldiers."* They share the new album with their grandfather. Now, Will selects Deepika's profile and drags the album they have just shared with him to the *"Grandkids"* album he's already made. He opens the *"Grandkids"* album and views the photos. He'll be able to view them whenever he likes, even if he isn't connected to the Internet.
   Will continues playing with his grandchildren.

2. **Karen Comes Home From Camp**

   Deepika comes home from camp and doesn't want to share all of her pictures with her mom, Sophie. Parents are lame and won't get all of the awesome stuff she did. On her phone where all her photos are, Karen creates a new folder called "Camp Treebrook" and selects only photos she wants to share with her parents. Then she drags the album to Sophie.

3. **Neel Makes a Presentation**

   Neel works at a bank and is on a trip to a train manufacturers in North Carolina with his team to assess and help close a deal. Inside the factory, one MD, Deepika, took many photos with her camera-phone both to use in the assessment presentation and proposal at work the next day and because she loves seeing the insides of factories. Neel is helping Deepika with the presentation, but he didn't think he would be allowed to take pictures inside the factory, so he didn't bring his camera; he would also love to have and share the pictures of the trains being built with his friends.

   In the airport waiting for their flight home from NC, Neel and Deepika are discussing the presentation, and they realize Deepika should make sure Neel has the photos so they can both work during the flight. Neel pulls out his laptop, and Deepika opens the PhotoShare app on her phone. She organizes all of her photos from that day into a folder called *"Trains"* and shares it with Neel.

   Neel spends a few minutes deciding what pictures he might want to use in the presentation and begins to organize the collection of pictures into two folders: the original, and a second, *"Presentation."* He goes through the album, selecting photos he might use and moves them to the new folder. They board the flight and Neel works throughout, adding photos to his slides from the easily accessible album *"Presentation."*

Storyboards:

Use Case 1:

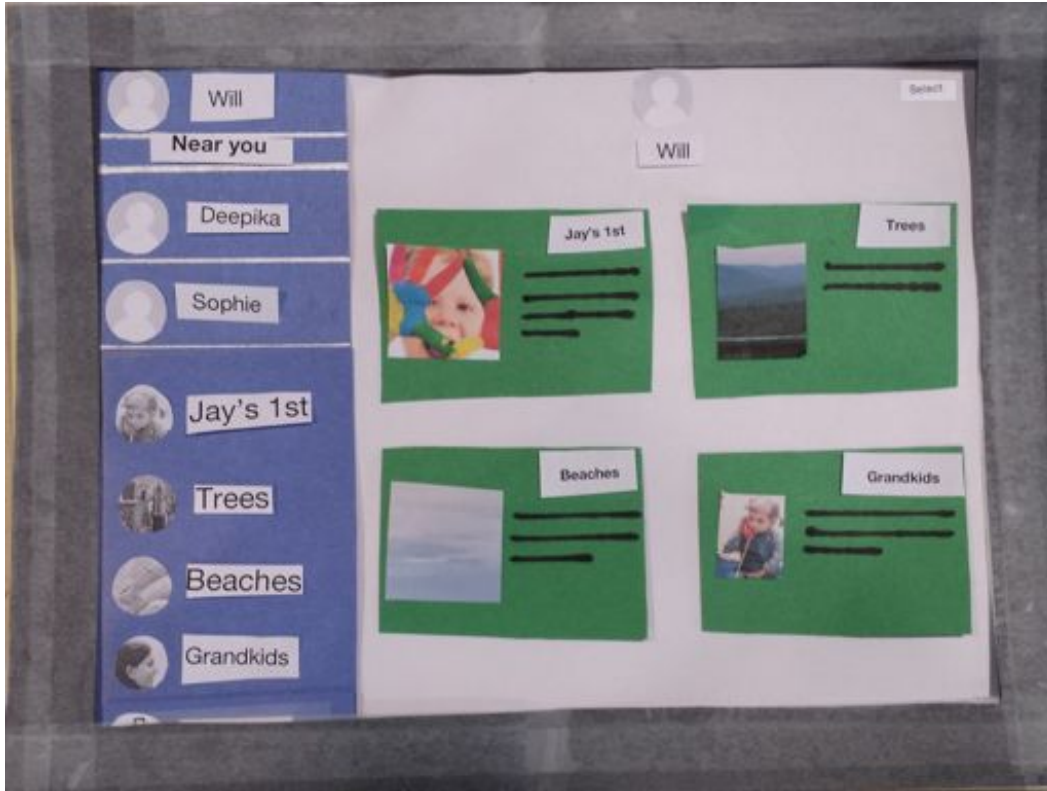Will logs in to the PhotoShare application.

Figure 1.

On the home screen (Figure 1) he can view thumbnails of all his albums and on the menu, he can see the people near him and a list of his own albums.
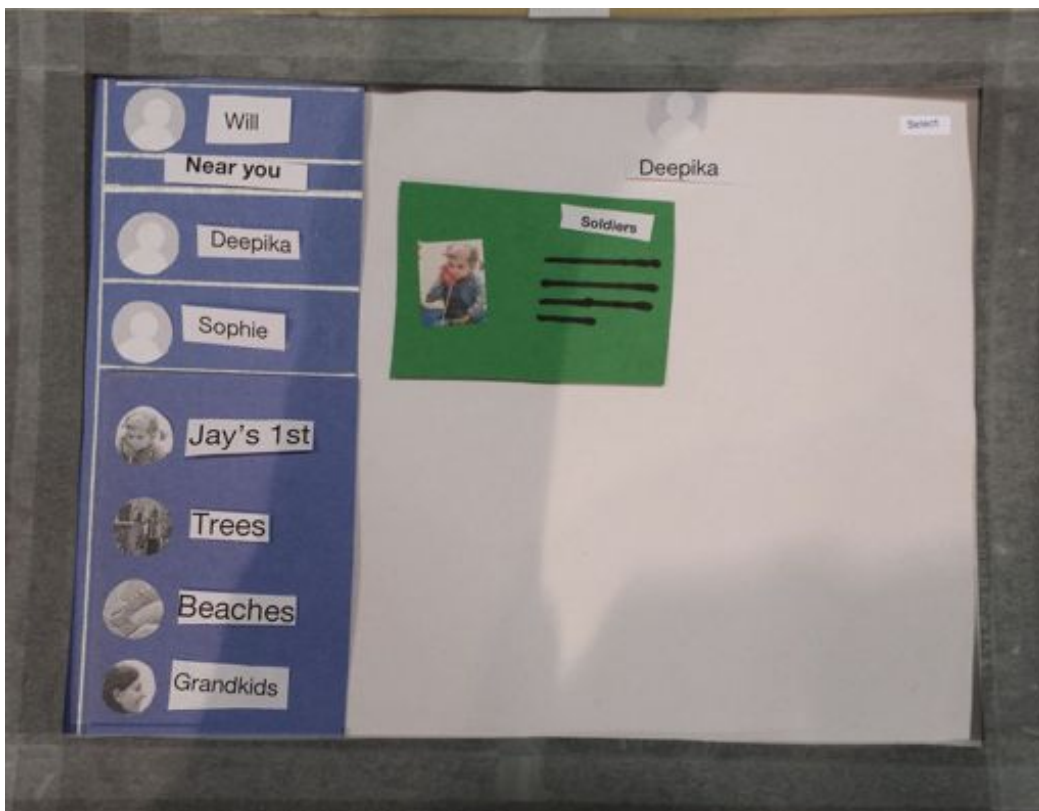

Figure 2.

He clicks on the user 'Deepika', his grandchild, to view the photos she shared with him. When he clicks he can see that Deepika has shared an album titled 'Soldiers' (Figure 2).
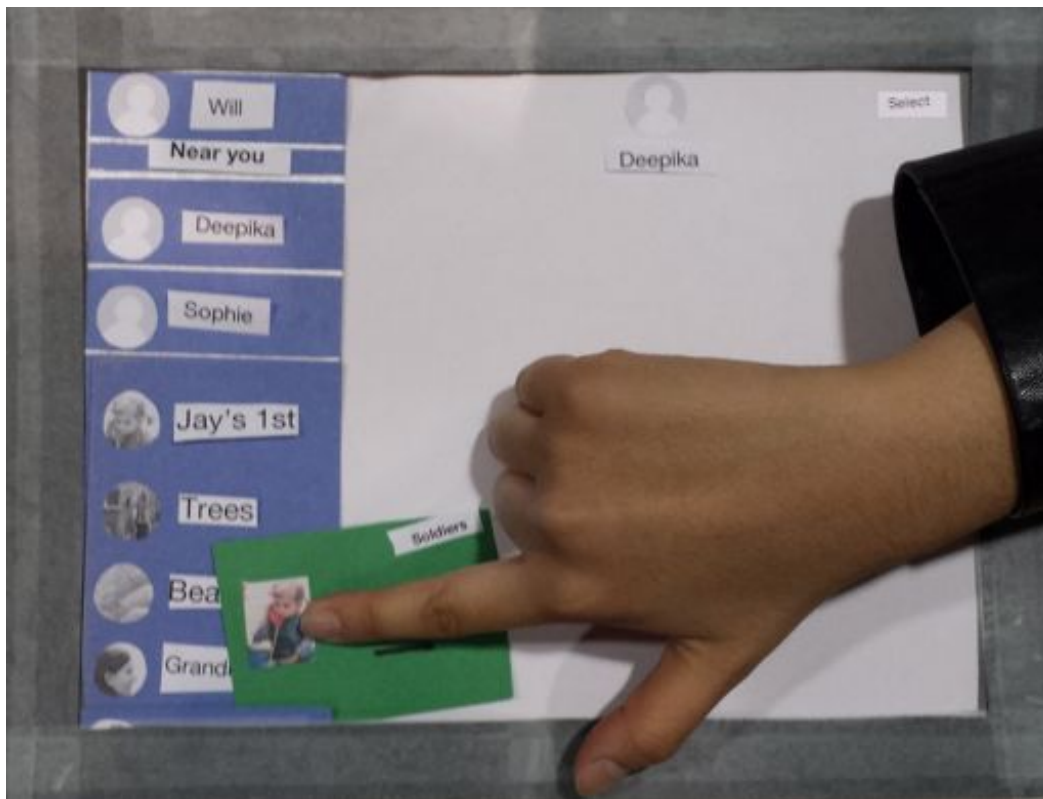
Figure 3.
Will is eager to view all the pictures but he also wants them with him forever. So he drags 'Soldiers' to his own alum 'Grandkids' to copy them to his device (Figure 3).
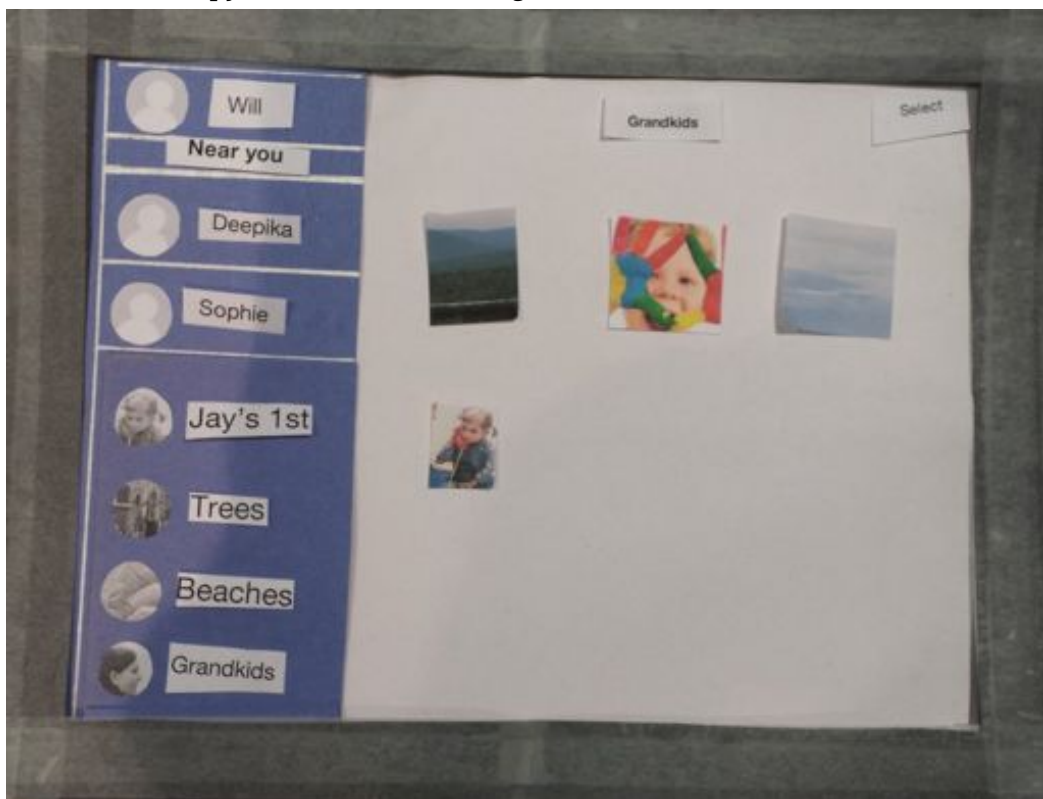
Figure 4.
Now Will opens the album 'Grandkids' to view them (Figure 4).

Use Case 2:

Deepika just came back from camp and shares some of her photos with her mom, Sophie. Sophie is curious to see what type of fun and activities Deepika was up to during the last two weeks. Sophie views the photos on her smartphone. On Sophie's home screen, she sees a list of her uploaded albums along with short descriptions (Figure 5). She slides out the sidebar menu and sees that her daughter, Deepika, is nearby. Sophie taps on Deepika's name to view her albums (Figure 6).
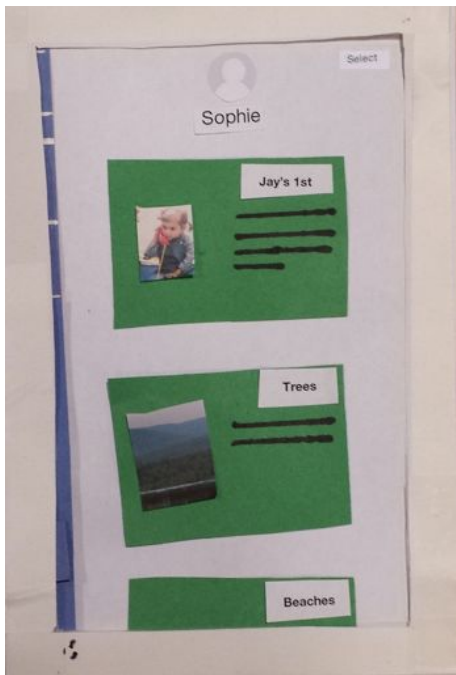
Figure 5.
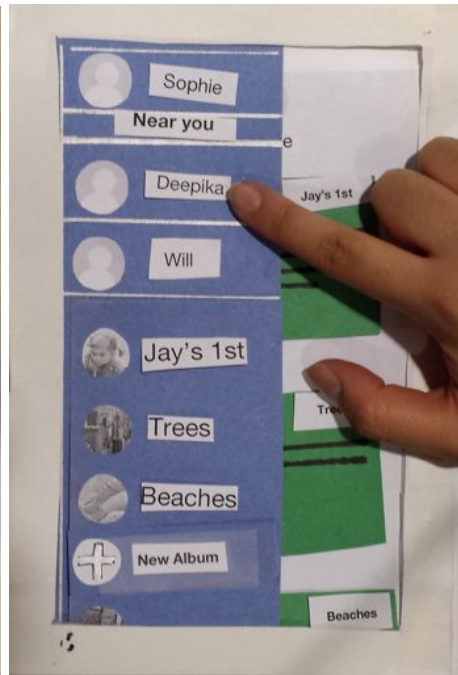
Figure 6.
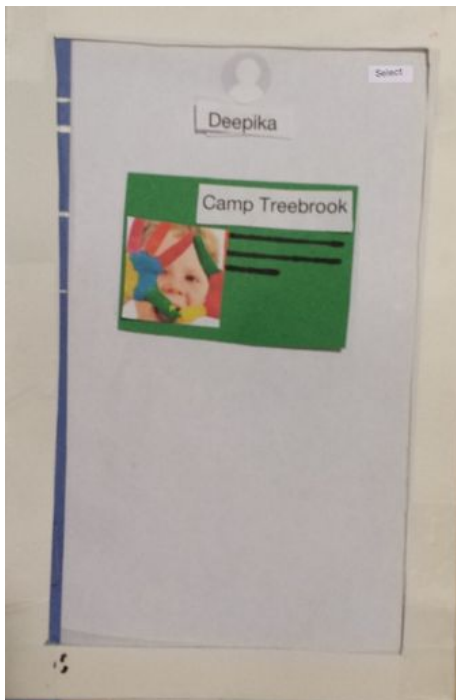
Figure 7.
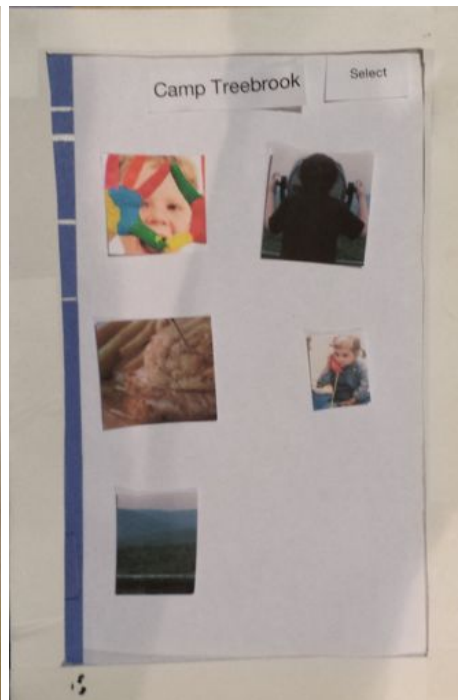
Figure 8.
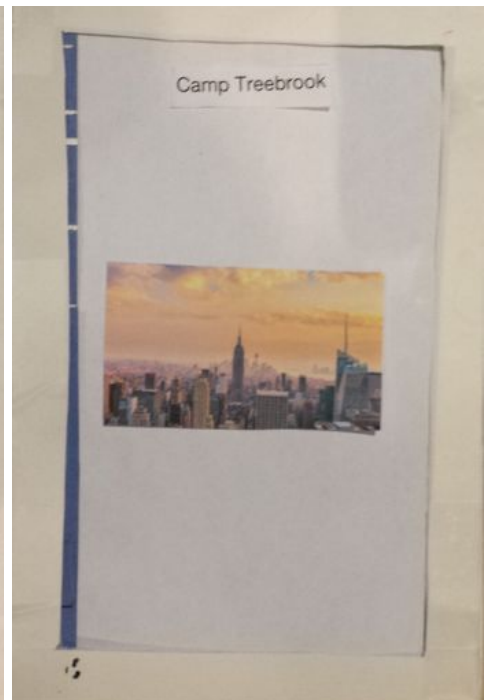
Figure 9.

Sophie sees that Deepika has added the album, "Camp Treebrook". Sophie would only be able to see albums that Deepika has explicitly shared with her (Figure 7). After tapping on the album card, Sophie sees a grid view of photos in the album (Figure 8). Tapping on an image thumbnail allows the user to view a larger version of the photo (Figure 9).

Use Case 3:

Neel works at a bank and is on a trip to a train manufacturers in North Carolina with his team from the bank to assess and help close a deal. Inside the factory, Deepika took many photos with his camera-phone to use in the presentation at work the next day. Neel is helping Deepika with the presentation, but he didn't think he would be allowed to take pictures inside the factory, so he didn't bring his camera; he would also love to have and share the pictures of the trains being built with his friends.

In the airport, waiting for their flight home, Neel and Deepika are discussing the presentation, and they realize Deepika should make sure Neel has the photos so they can both work during the flight. Neel pulls out his laptop, and Deepika opens the app on her phone.

Deepika organizes all of her photos from that day into an album called "Trains" and shares it with Neel. In Figure 10, we see Deepika's home screen, with the relevant photos in the "Trains" album. In Figure 11, we see her dragging that album to the menu, on to the icon for Neel in order to share them with him.
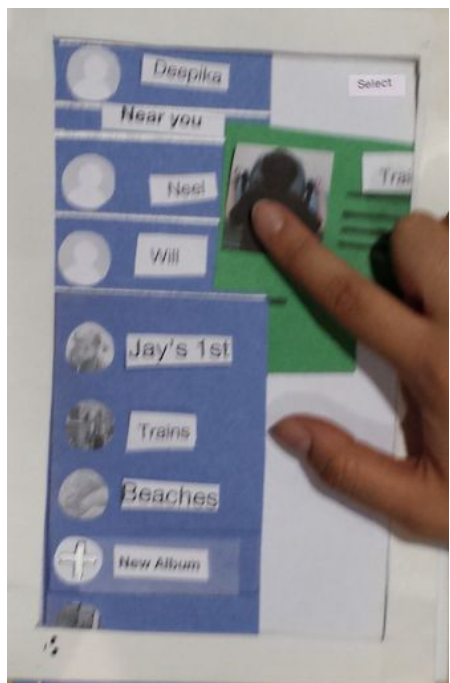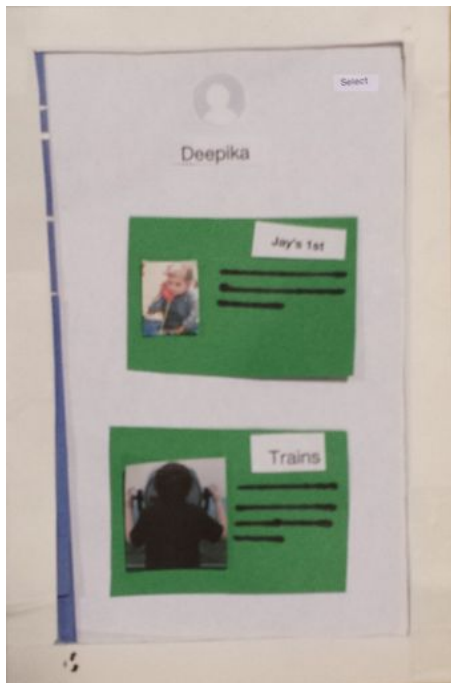
Figure 10.   Figure 11.

Now, Neel opens up the app on his computer (Figure 12, home screen), and clicks on Deepika's name in the "around me" menu. There, he sees the "Trains" album just shared with him (Figure 13).
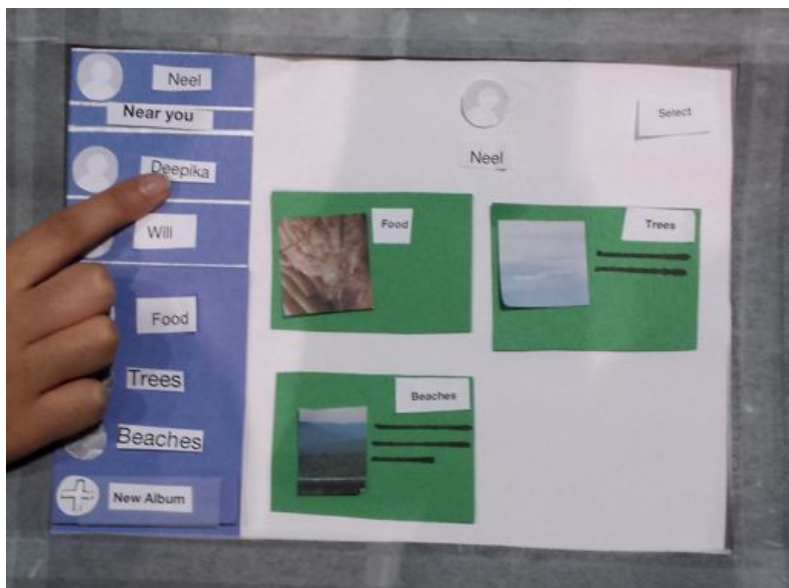
Figure 12.
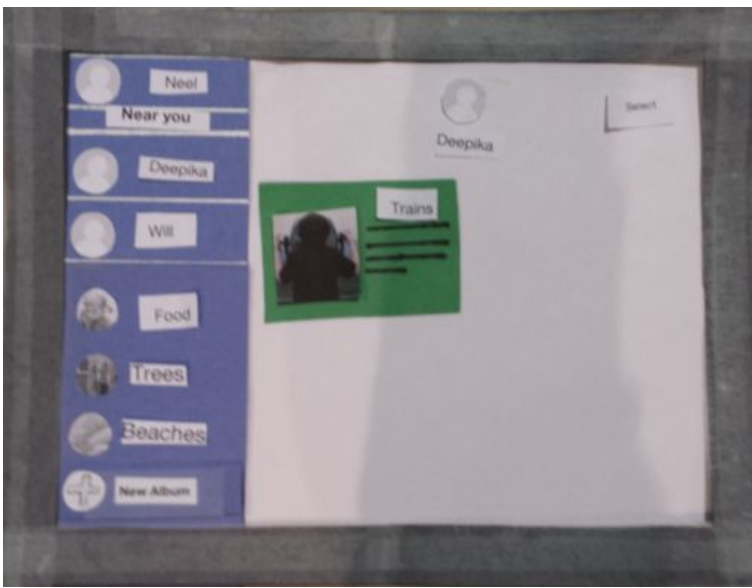
Figure 13.

Now, he opens the "Trains" album that Deepika has shared with him (Figure 14) and enables "Select" mode by tapping the select button in the top-right, leading to the screen in Figure 15. Here, he select two images he wants to use in the presentation.
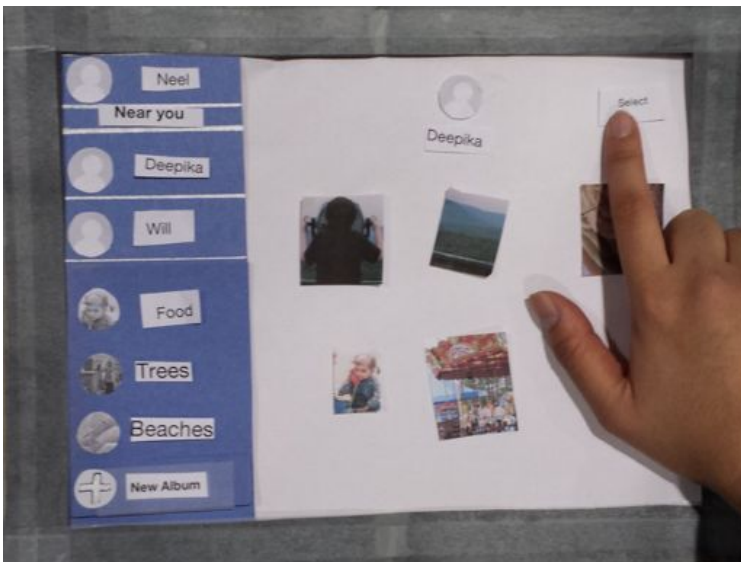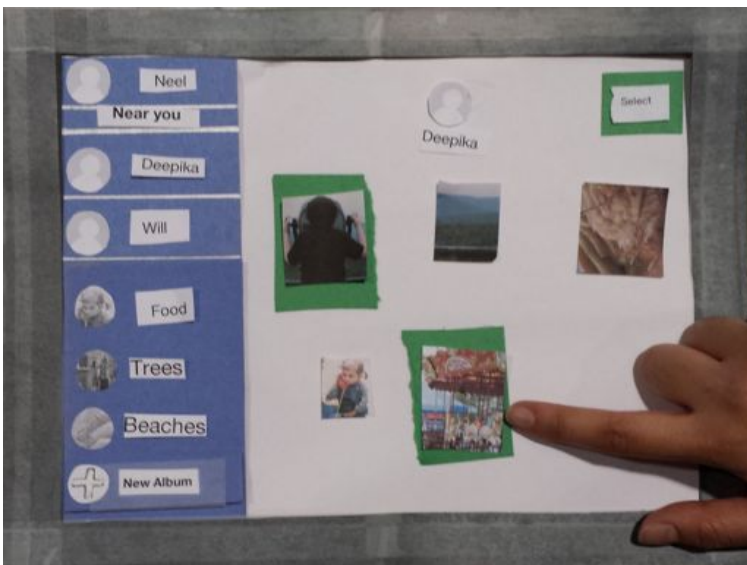

Figure 14.

Figure 15.

Next, Neel drags those two images on to the "New Album" button to copy them to his device (Figure 16) and organizes them in a new album. Upon doing so, a pop-up appears where Neel can add the metadata for his new album. He does so in Figure 17, giving this new album the name "Presentation."
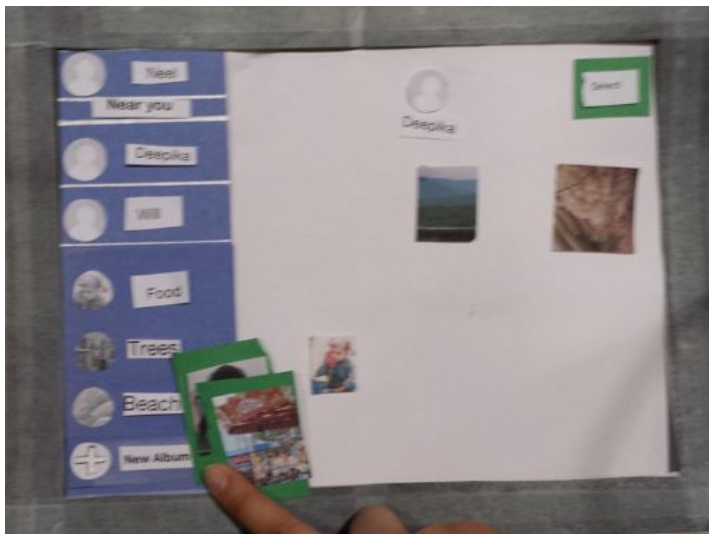
Figure 16.
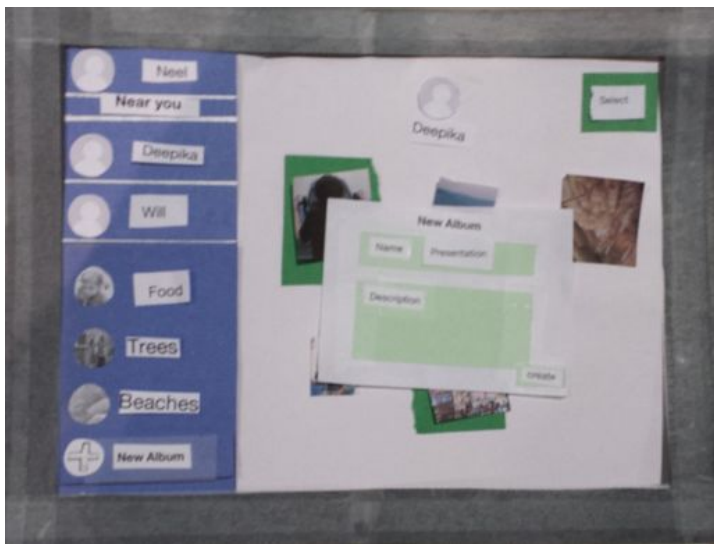
Figure 17.

Now, Neel can tap his own name in the menu to see his local albums. Now that this new "Presentation" album exists, he can view those two images he selected from here (Figure 18). The album also appears in the menu.
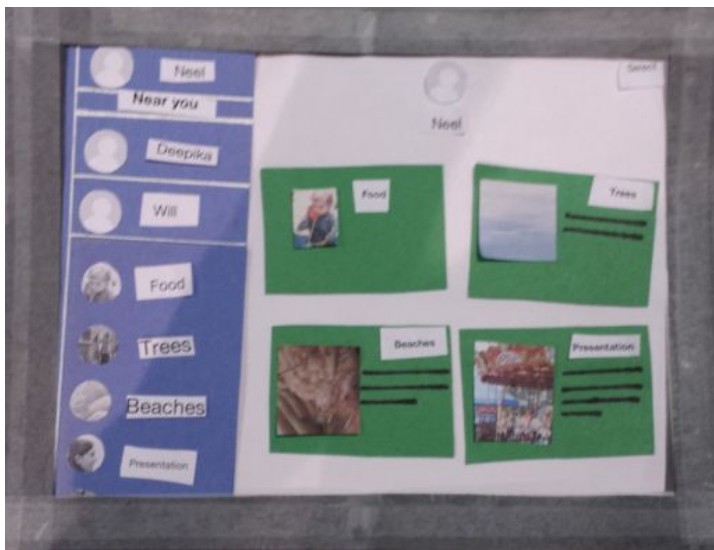
Figure 18.

Part II. User Tests

Test 1 Summary:

Tester: Raul
Greeter: Neel
Computer: Will
Documenter: Sophie
Facilitator: Karen

Our first tester was Raul. From the home screen, he clicked on the album "Trees". Then he selected a single photo from the album bringing up single picture view. He dragged the photo into one of the contacts currently on his wifi network, Will. He also dragged the photo into another album, Beeches. Then he entered the beeches folder and dragged the contents into "new album" creating a new album with these images. At this point he was not sure how to get back to the previous page. The facilitator explained. He then shared an album with another contact, Deepika. He then clicked Deepika's profile. At this point he asked " How do I know what I shared with her?" We improvised a divider on the profile page below which shared items appear labeled "Shared by you". Then he asked "What does select do?" The facilitator explained. Then he multi-selected photos and shared them with Will. Then he asked "Does the user list represent when new users come online?". We improvised removing a user. He also asked "Is there a way to undo an action?". We did not have one and we wrote this down as a future improvement. He then viewed a single photo, and went back to his profile.
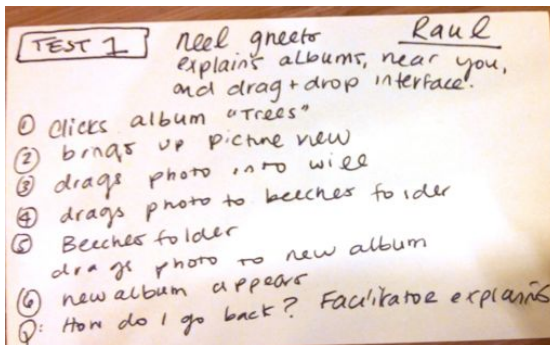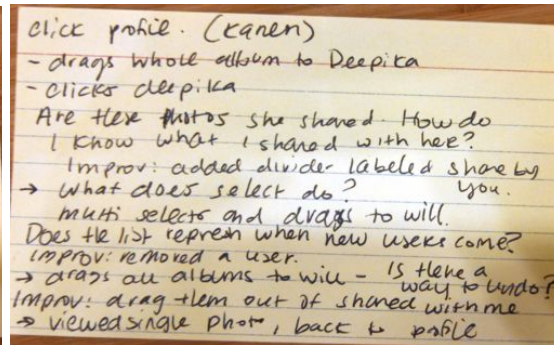

Figure 19.

Figure 20.

Test 2 Summary:

Tester: Huimin
Greeter: Karen
Facilitator: Neel
Computer: Will
Documenter: Sophie

Our second tester was Huimin. First she clicked on one of her albums. Then she dragged a single photo to share with Will. She wanted to select multiple photos and asked, "How do I select them?". The facilitator explained our multi-select tool. She then dragged all 3 albums to share with Will. She clicked Will to see his albums. She asked "is this what he shared with me?" and "What if I only want to share a few photos?" The facilitator explained our improvised "Shared with me" and how to create a new album with photos. She also asked "How do I go back?" reinforcing that we need to add a back button. She then clicked on Will again, dragged one of his albums to her own profile and then clicked back to her profile.
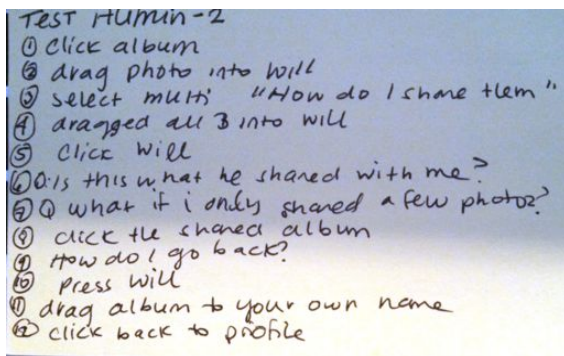
Figure 21.

Test 3 Summary:

Tester: Daniel
Greeter: Karen
Facilitator: Neel
Computer: Will
Documenter: Sophie

Our third tester was Daniel. After Karen greeted him, Daniel opened one of his albums from the home screen. He then dragged a photo to Will to share it with him. He asked the facilitator how to use multiselect, which was explained. Then he dragged multiple photos to share with will. Then he clicked on Will and asked if what he was seeing were photos shared with him. He asked what would happen if he only shared a few photos and not an album. He clicked on the album Will shared with him. Then he asked "How do I go back?". The facilitator explained to click on Will, which he did. He then dragged an album from Will to his own name and then clicked back to his profile.
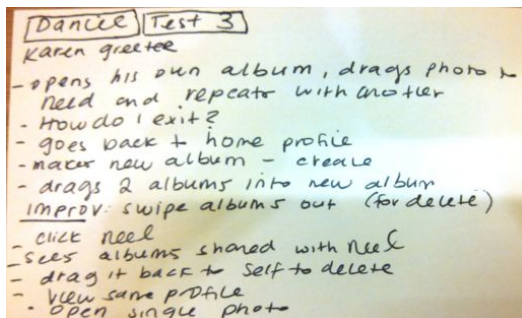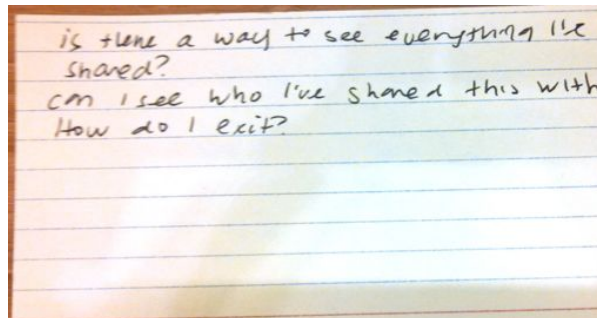
Figure 22.   Figure 23.

Test 4 Summary:

Tester: Rahul
Greeter: Karen
Facilitator: Neel
Computer: Will
Documenter: Sophie

Rahul began by attempting to view the birthday album from his home screen. Next, he selected a few photos from the "Birthday" album and copied them to the pre-existing "Trees" album in the menu. He had little trouble up until this point. Next, he wanted to return to his profile. It took a bit of direction to indicate that there was no back button, and he needed to tap his own name to return to the profile image (indicating the possible need for a better navigational system). After returning to his profile page, he wanted to share the "Beach" album with Neel. He did so. Next, he asked how to see what albums he had shared with Neel, which was clarified by the recently added horizontal bar that indicated what albums had been shared with Neel. He looked at the albums shared with Neel and clicked Neel's album to see the photos. He then attempted to unshare the "Beach" album he had just shared with Neel, which was when we realized there was no functionality in place to do so.
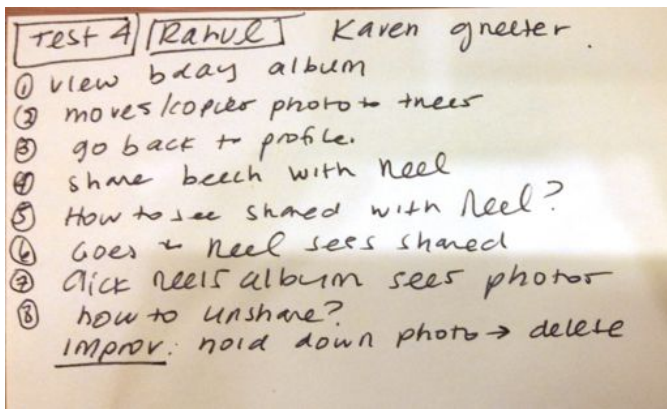
Figure 24.

Extra Fun Pictures from Testing:

Figure 25.

Figure 26.

Figure 27.

Part III. User Tests Analysis

Following testing, we found five major issues that needed to be addressed in our prototype: poor navigational tools, lack of clarity which images you've shared with others, the lack of functionality for deleting albums, murky multi-select process, and lack of clarity with undoing actions. We analyzed the results at the end of the four evaluations, and compiled feedback on the prototype is presented below.

The first issue, poor navigational tools within the app, is an issue with the **"Flexibility and efficiency of use"** heuristic. Because the user has difficulty understanding how to navigate the app, he or she also becomes an inefficient user of it. As you see in Figure 28, the only way for the user to return to the screen displaying their images si by clicking their own name. This can be confusing for navigation.
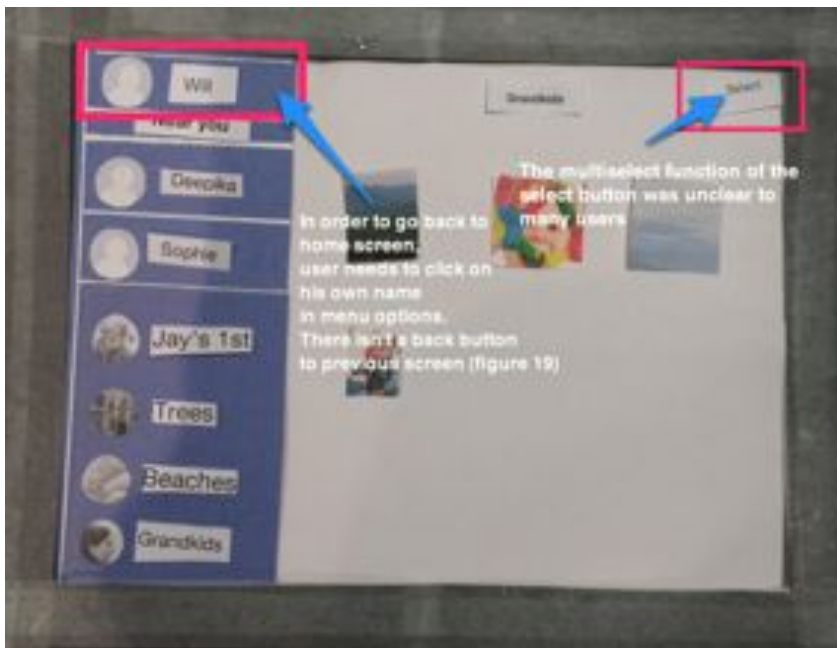
Figure 28.

The second issue, lack of clarity which images you've shared with others, is an issue with the **"Visibility of system status"** heuristic because the user isn't always aware of what has happened in the backend of the interface. As you can see in Figure 29, it's unclear which images you've shared with others. We wanted to make it easier by adding it to the main profile screen.
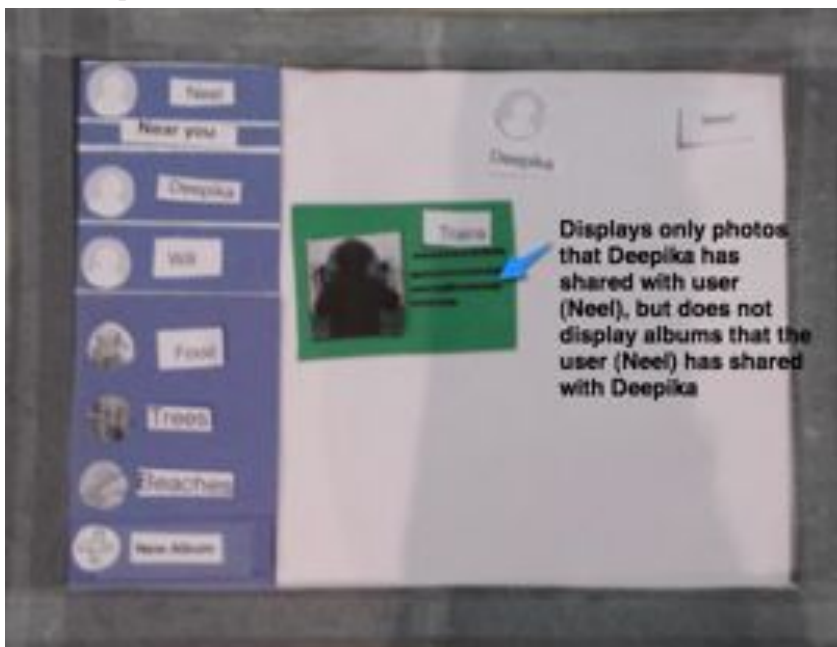
Figure 29.

The third issue, a murky multi-select process, is exhibited in Figure 28. It's not immediately apparent that in order to select multiple images, you must first enable "Select" mode by tapping the select button. This might be a product of our prototype method, but either way, it's a violation of the **"Match between system and the real world"** heuristic.

The fourth issue, lack of functionality for undoing sharing, can be seen in Figure 30. Here, once the user drags and drops one or more images to share with someone, there is no way to immediately undo that action. This is an issue with the **"User control and freedom"** heuristic because the user lacks the freedom to undo his or her mistakes.
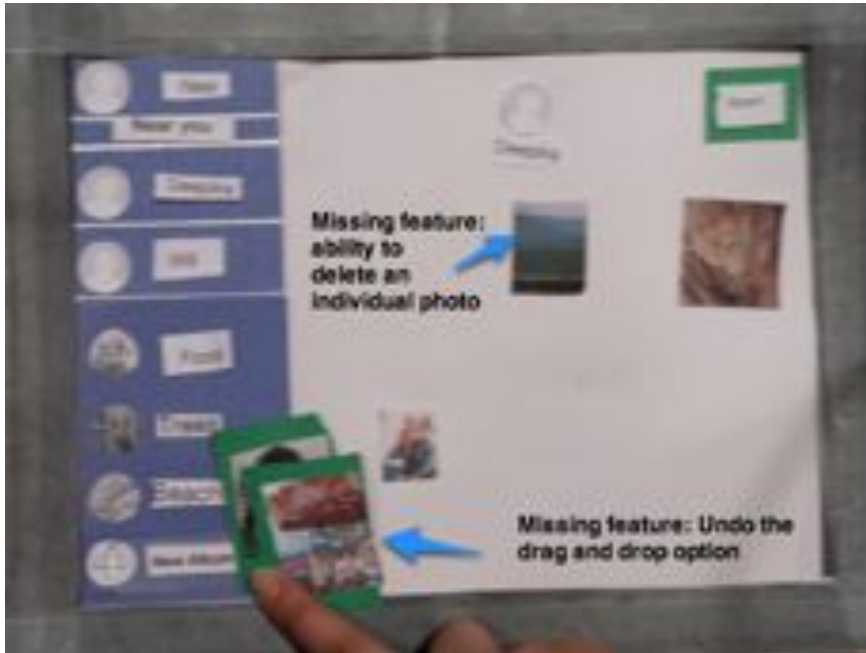
Figure 30.

The final issue, lack of functionality for deleting albums, can be seen in Figure 30 as well. Here, users cannot remove a photo from their library after adding it. This is another violation of the **"User control and freedom"** heuristic. The user should be able to delete any photo at will at any point.

Part IV. Revisions

To solve the problems we identified during testing, we made several revisions and clarified our design decisions (Figure 31):

1. **Shared By You**

We added a divider in the shared user profile view to specify which albums you have shared with a given user, and those that user has shared with you. This makes it very clear what albums and photos you've shared with a given user, makes undoing those actions straightforward; unsharing an album is as simple as dragging it *out* of the "shared by you" section.

2. **Back**

Located in the upper left, nearby the menu, and particularly the upper part of the menu where most of the change-of-context occurs, the "back" button provides an easy and intuitive emergency-exit mechanism that users reported feeling lost without.

3. **Undo**

The newly added undo button allows for intuitive and immediate action-reversal minimizing the chance of potentially disastrous consequences of mis-shares and other errors.

4. **Select**

Following the testing session, we decided that although users tended to find the multi-select button out of the way and its functionality not entirely intuitive, it is a valuable function and is implemented effectively and consistently. We recognize *multi-select* as a non-primary functionality; as a result, we decided to leave the multiselect functionality as-is, either as a valuable tool for the power-user or as a learned usage to enhance an otherwise-accomplishable task of sharing multiple entities. Further it is difficult to discern the influence of a paper prototype on the usability of a function like *multi-select*, which relies on interactive effects hover and shading effects to maintain a skeuomorphic intuitiveness.
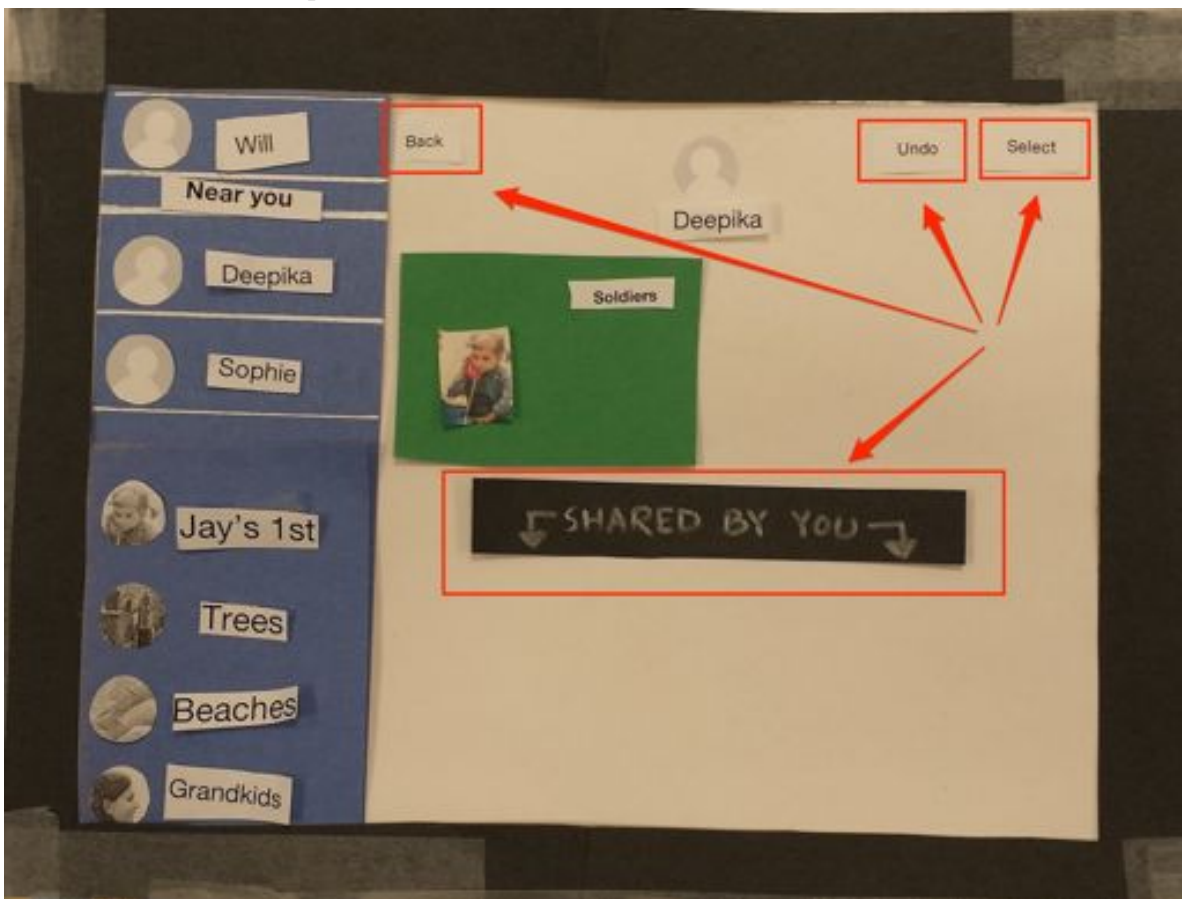

Figure 31. Major features added to the prototype.

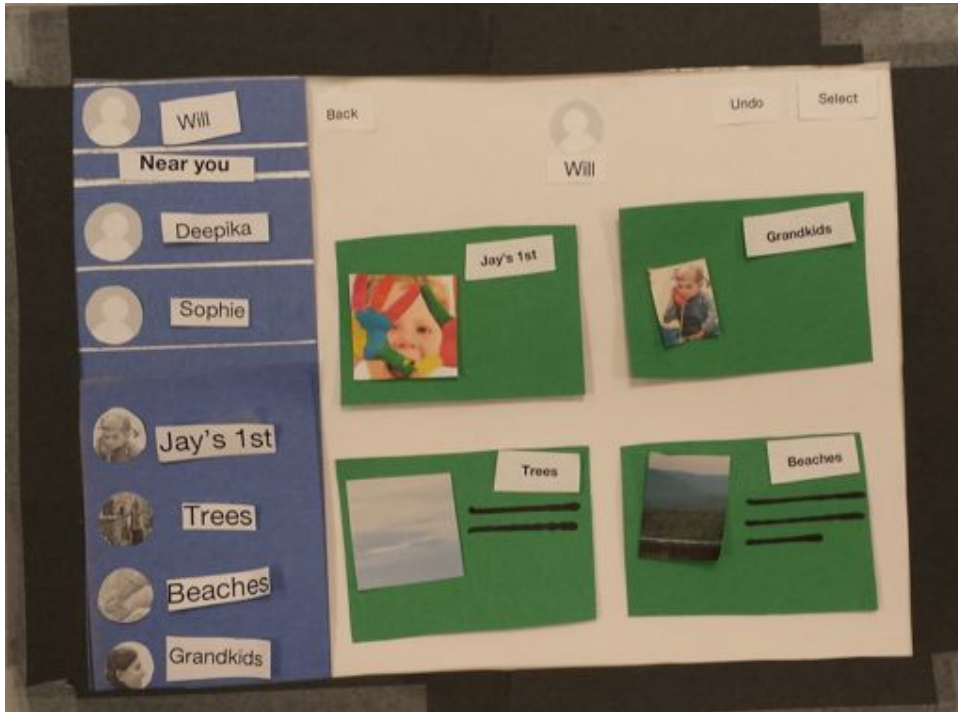## Revised Storyboards:

Use Case 1:

Figure 32.

Will logs in to the PhotoShare application. On the home screen he can view thumbnails of all his albums and on the menu, he can see the people near him and a list of his own albums (Figure 32).
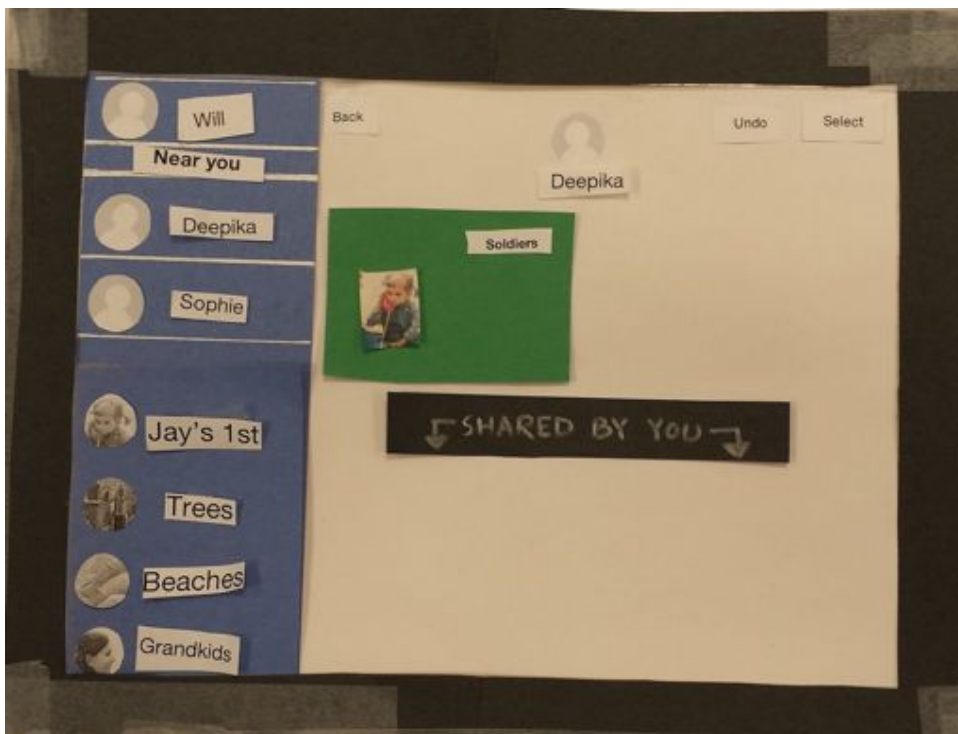

Figure 33.

He clicks on the user 'Deepika', his grandchild, to view the photos she shared with him. When he clicks he can see that Deepika has shared an album titled 'Soldiers' (Figure 33).
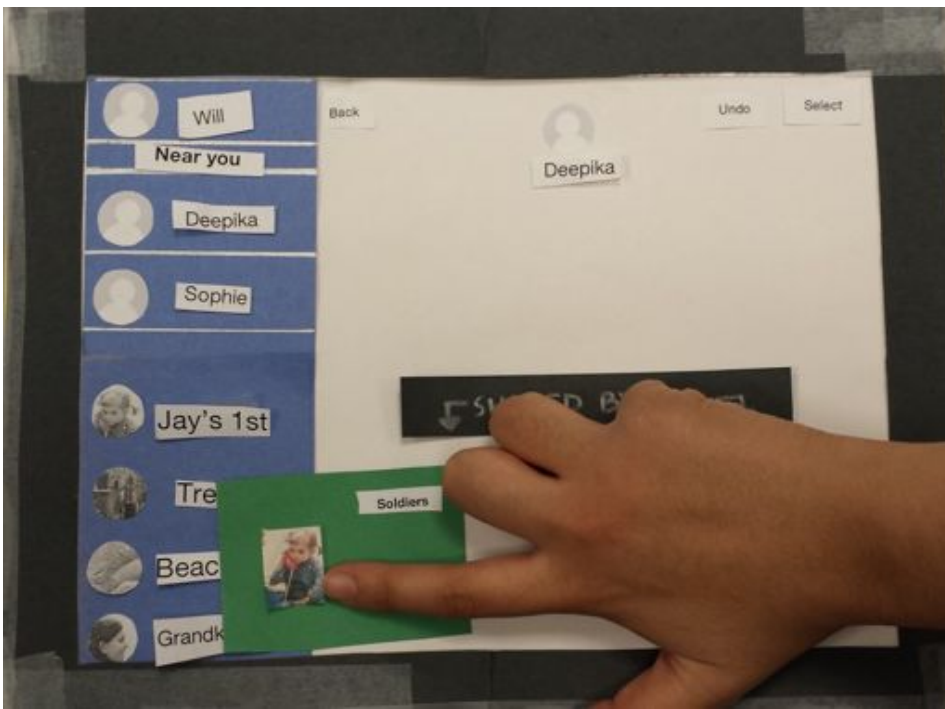
Figure 34.
Will is eager to view all the pictures but he also wants them with him forever. So he drags 'Soldiers' to his own album 'Grandkids' to copy them to his device (Figure 34).
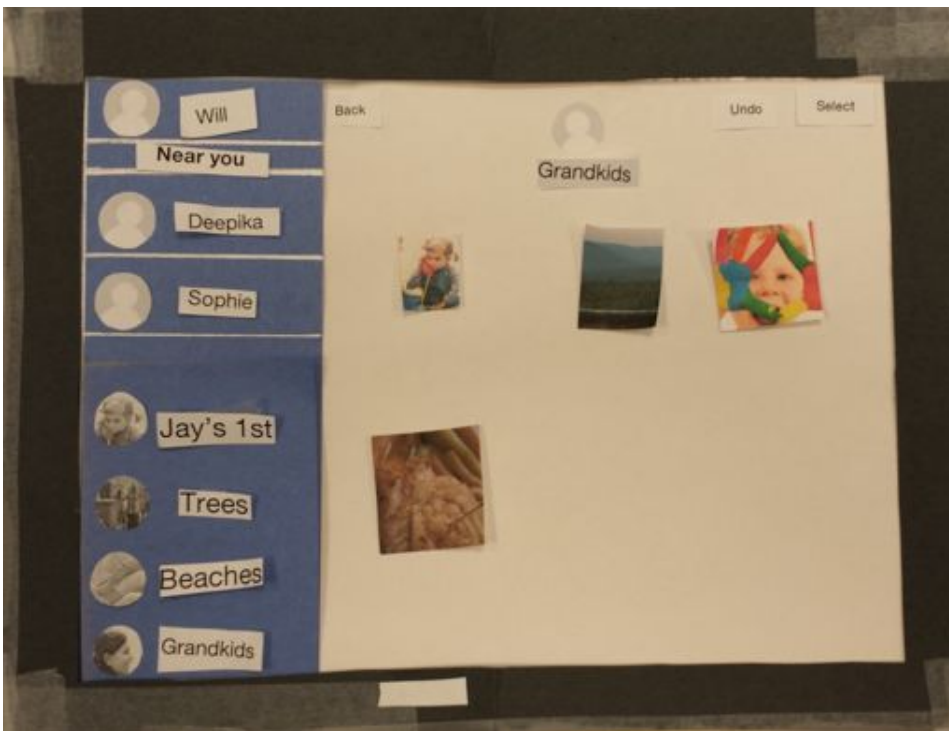
Figure 35.

Now Will opens the album 'Grandkids' to view them (Figure 35).

Use Case 2:

Deepika just came back from camp and shares some of her photos with her mom, Sophie. Sophie is curious to see what type of fun and activities Deepika was up to during the last two weeks. Sophie views the photos on her smartphone. On Sophie's home screen, she sees a list of her uploaded albums along with short descriptions (Figure 36). She slides out the sidebar menu and sees that her daughter, Deepika, is nearby. Sophie taps on Deepika's name to view her albums (Figure 37).
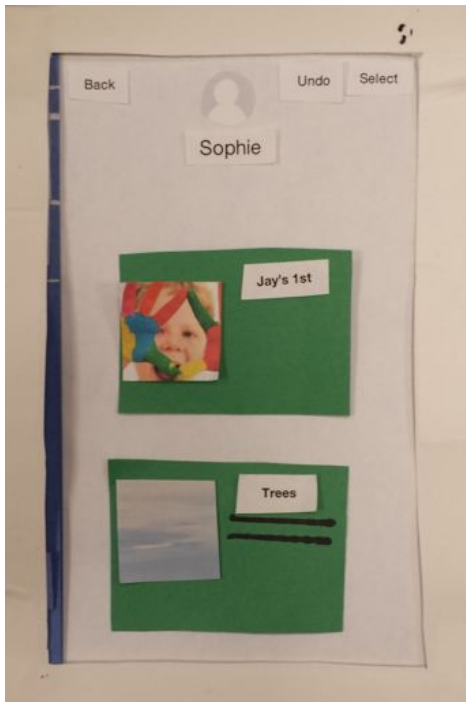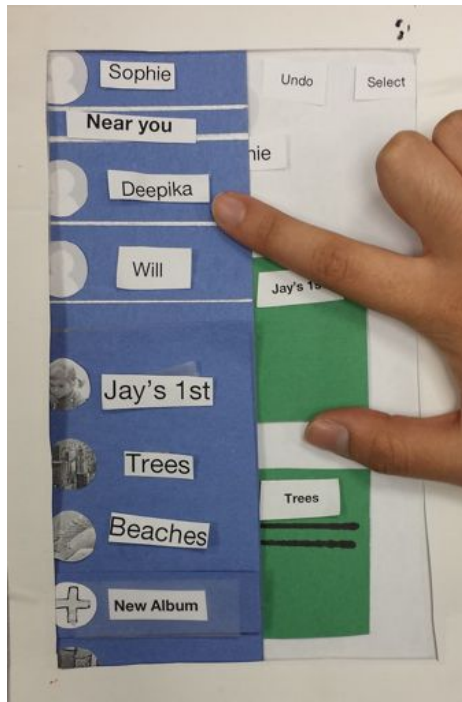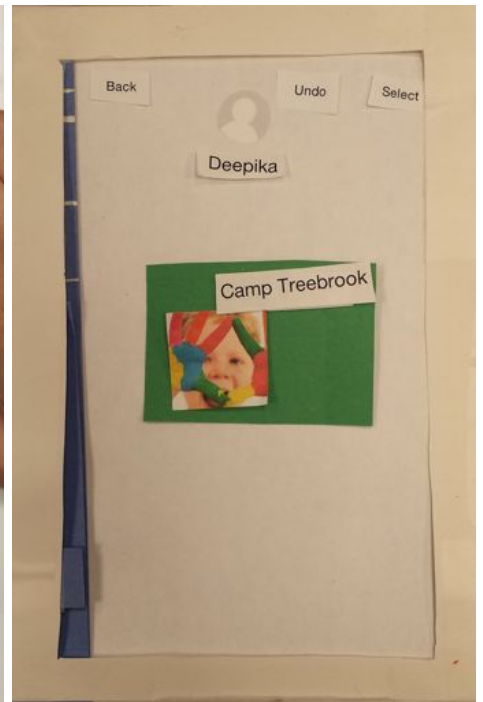
Figure 36.   Figure 37.   Figure 38.

Sophie sees that Deepika has added the album, "Camp Treebrook". Sophie would only be able to see albums that Deepika has explicitly shared with her (Figure 38). After tapping on the album card, Sophie sees a grid view of photos in the album (Figure 39).Tapping on an image thumbnail allows the user to view a larger version of the photo (Figure 40).
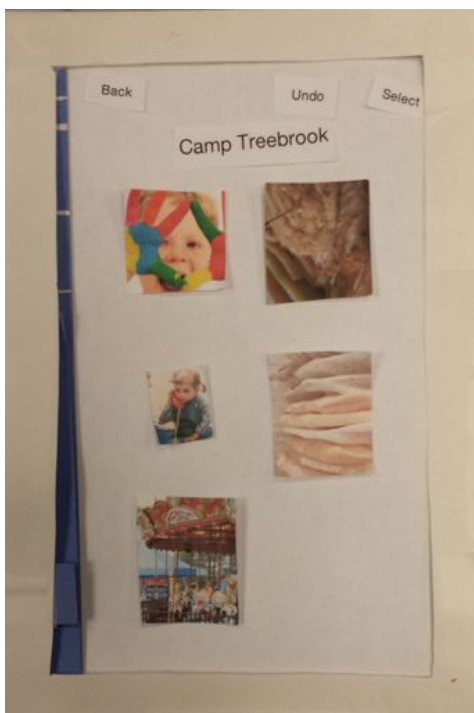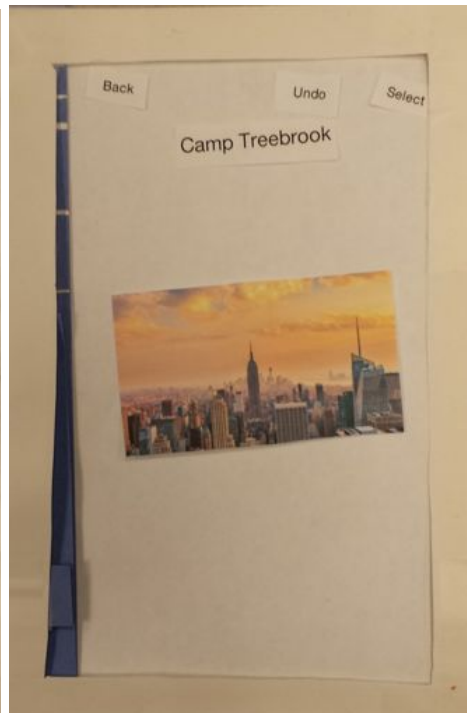

Figure 39.   Figure 40.

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Use Case 3:

Neel works at a bank and is on a trip to a train manufacturer in North Carolina with his team from the bank to assess and help close a deal. Inside the factory, Deepika took many photos with her camera-phone to use in the presentation at work the next day. Neel is helping Deepika with the presentation, but Neel didn't think he would be allowed to take pictures inside the factory, so he didn't bring his camera. He would also love to have and share the pictures of the trains being built with his friends.

In the airport, waiting for their flight home, Neel and Deepika are discussing the presentation, and they realize Deepika should make sure Neel has the photos so they can both work during the flight. Neel pulls out his laptop, and Deepika opens the app on her phone.

Deepika organizes all of her photos from that day into an album called "Trains" and shares it with Neel. In Figure 41, we see Deepika's home screen, with the relevant photos in the "Trains" album. In Figure 42, we see her dragging that album to the menu, on to the icon for Neel in order to share them with him.
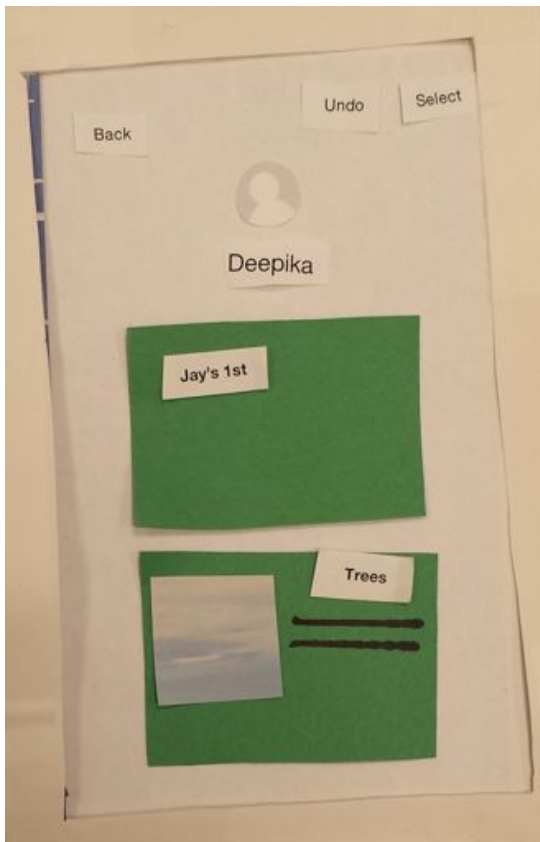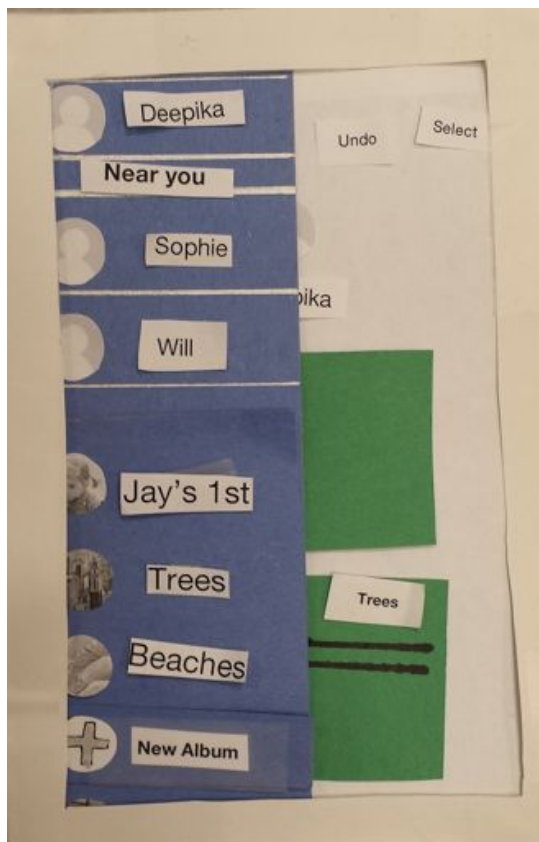

Figure 41

Figure 42.

Now, Neel opens up the app on his computer (Figure 43, home screen), and clicks on Deepika's name in the "around me" menu. There, he sees the "Trains" album just shared with him (Figure 44).
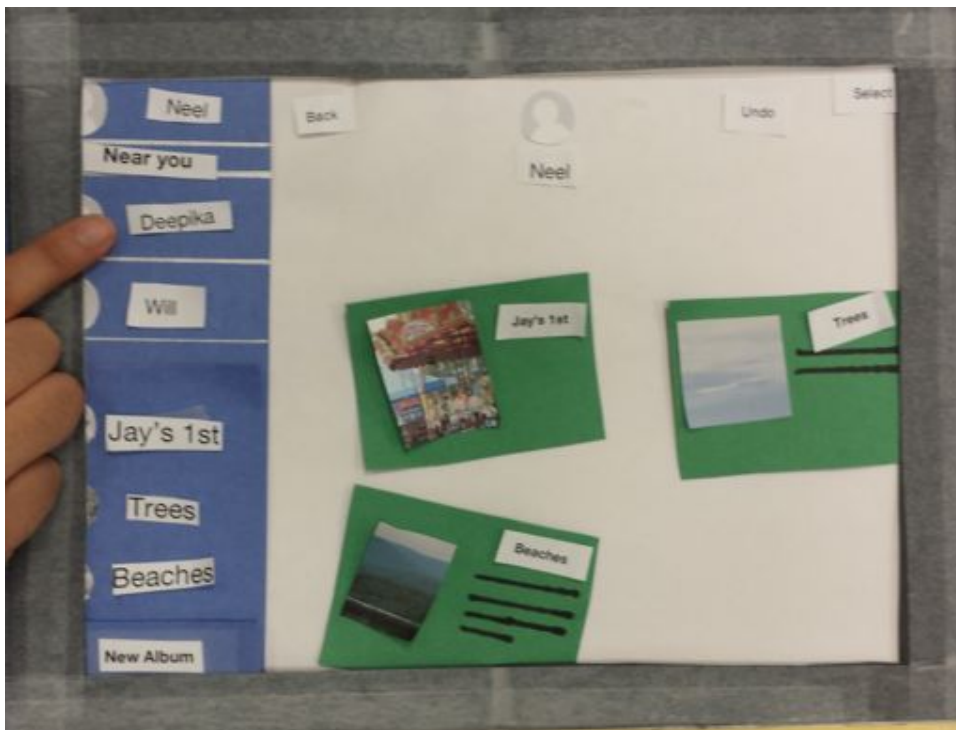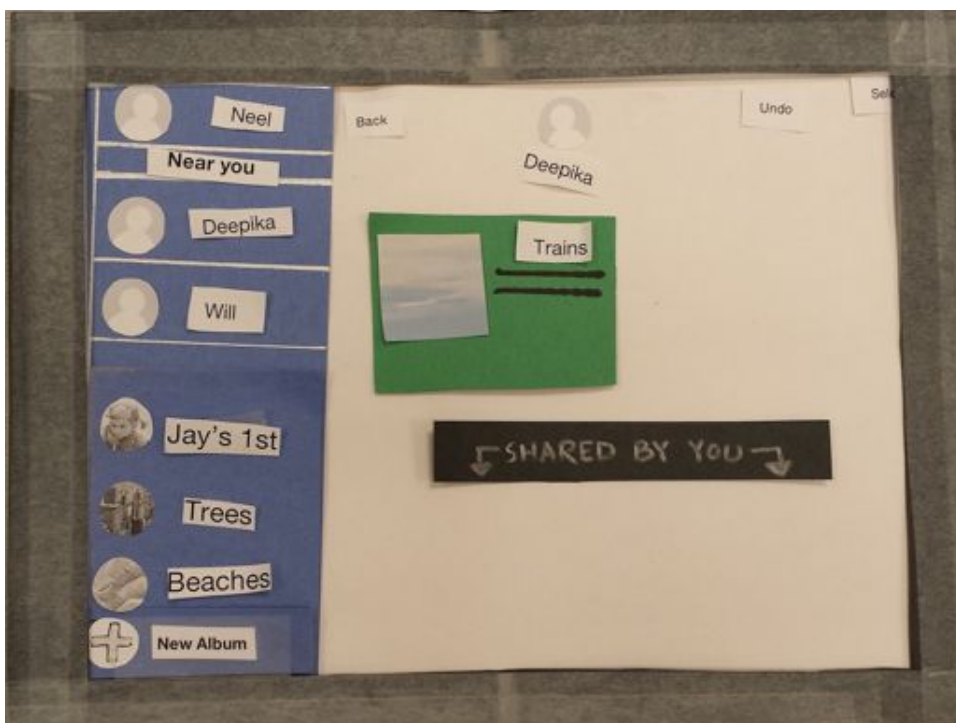
Figure 43.

Figure 44.

Now, he opens the "Trains" album that Deepika has shared with him (Figure 45) and enables "Select" mode by tapping the select button in the top-right, leading to the screen in Figure 46. Here, he selects two images he wants to use in the presentation.
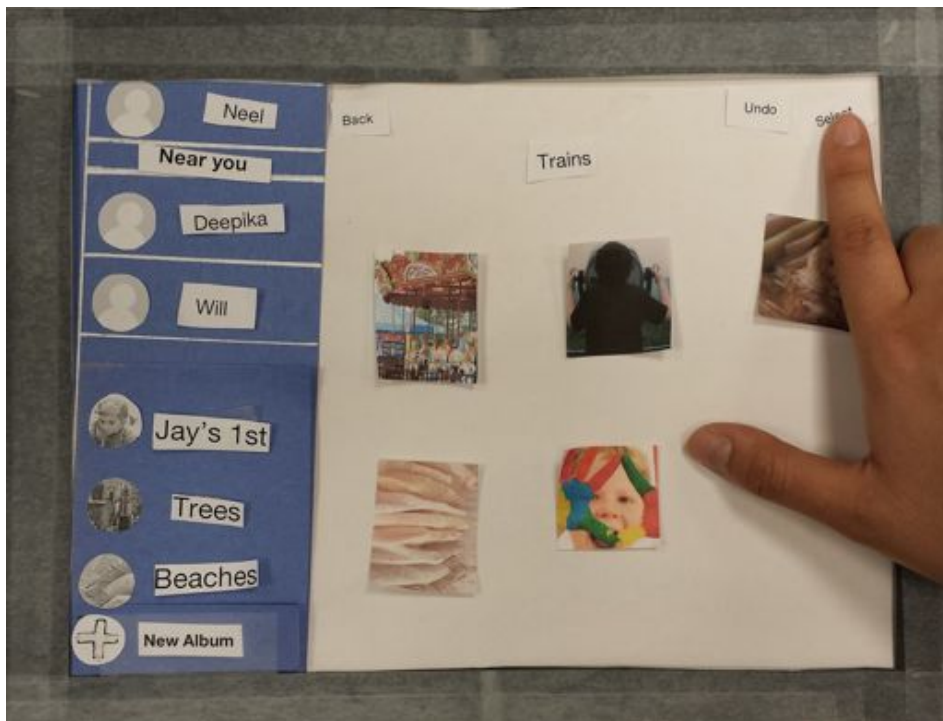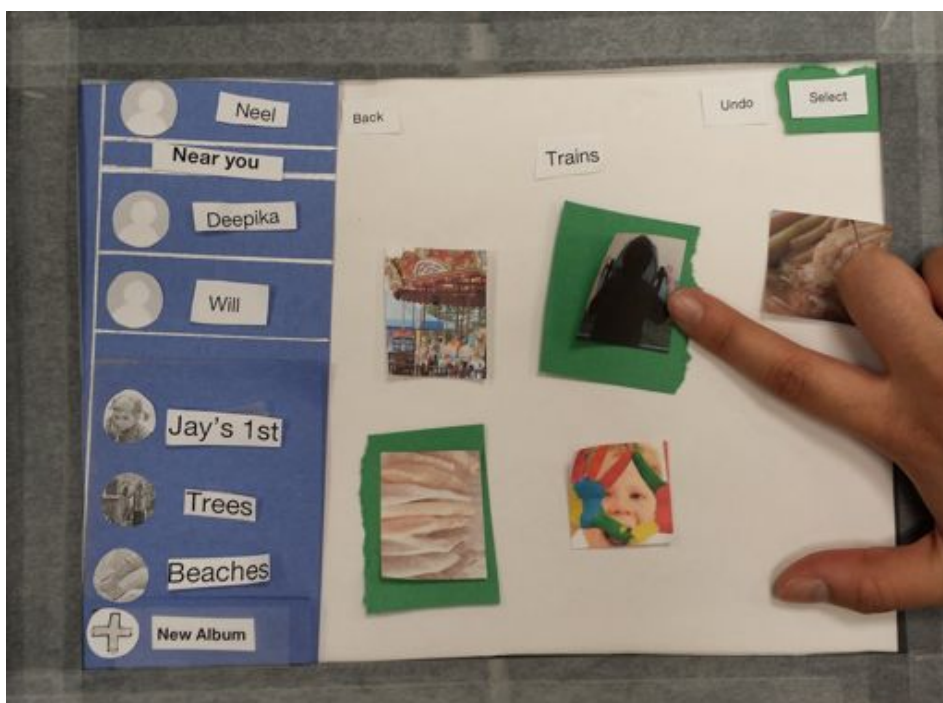
Figure 45.

Figure 46.

Next, Neel drags those two images on to the "New Album" button to copy them to his device (Figure 47) and organizes them in a new album. Upon doing so, a pop-up appears where Neel can add the metadata for his new album. He does so in Figure 48, giving this new album the name "Presentation."
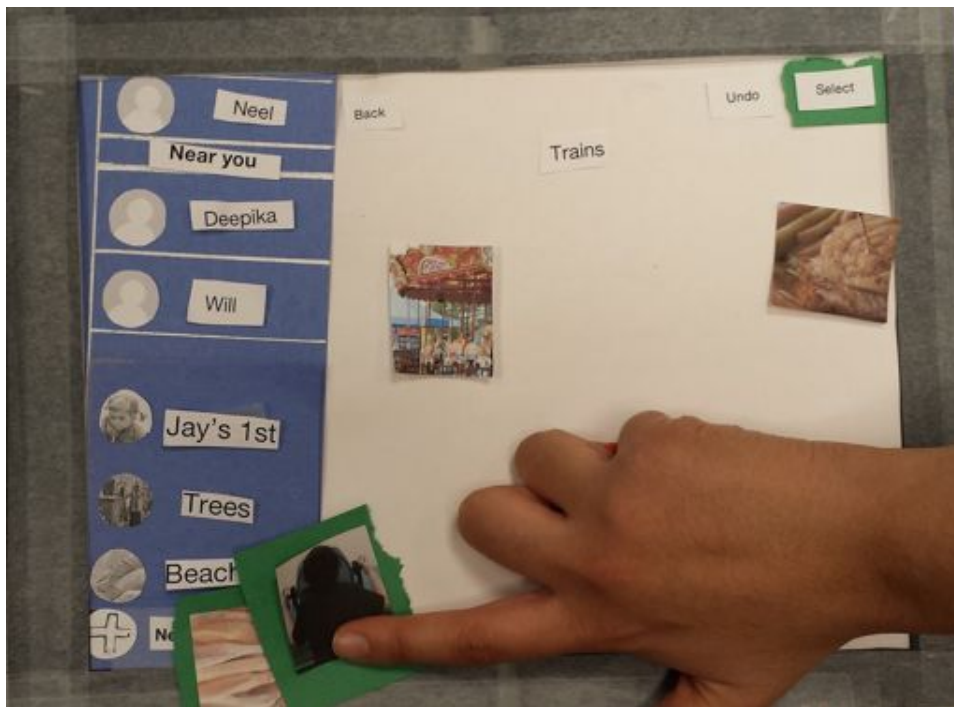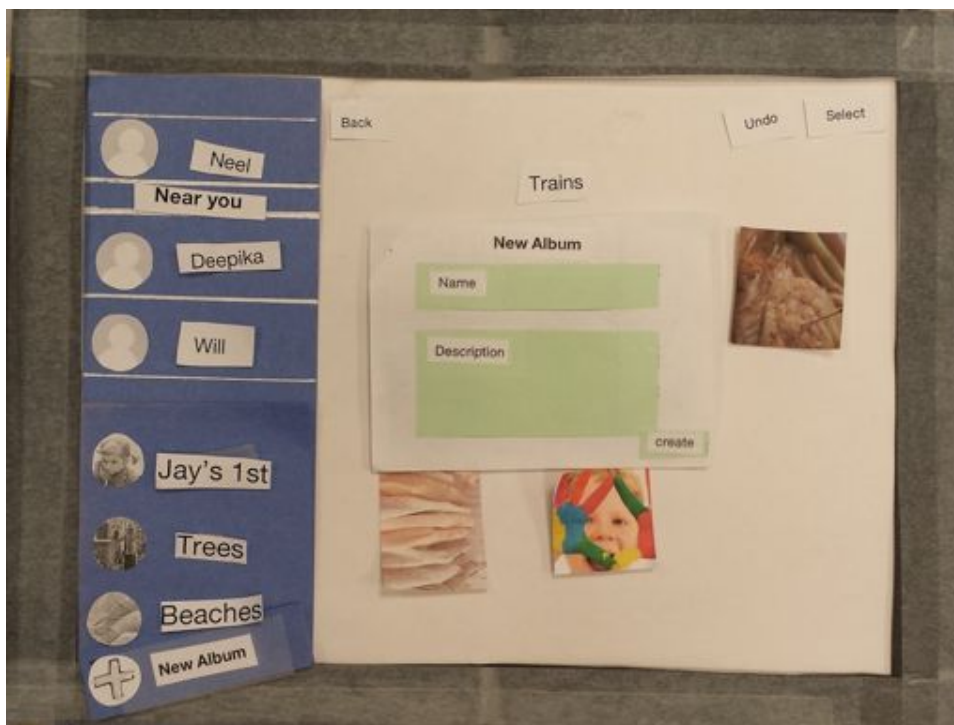
Figure 47.

Figure 48.

Now, Neel can tap his own name in the menu to see his local albums. Now that this new "Presentation" album exists, he can view those two images he selected from here (Figure 49). The album also appears in the menu.
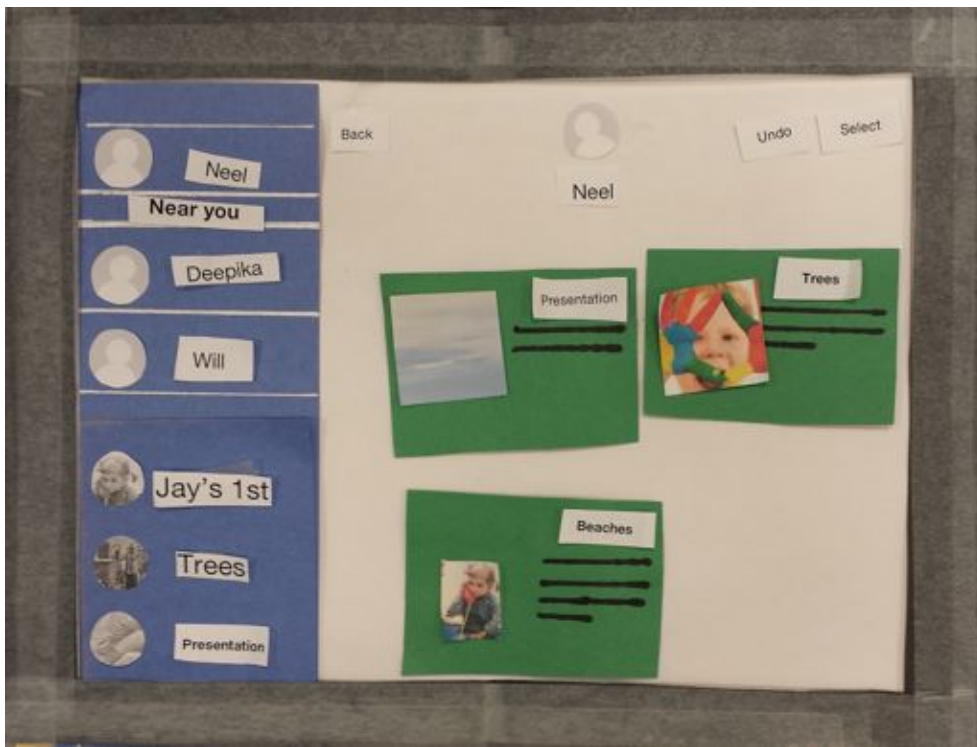
Figure 49.

Video Use Scenarios

The video use scenarios can be found at
https://dl.dropboxusercontent.com/u/21831023/_UI/Photobomb.mp4 and
http://youtu.be/jGDm_bcKKTo