Window

Low-Fi Prototyping & Pilot Usability Testing

Authors and Roles:

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Elisa Lupin-Jimenez: Design, Usability Testing

Mission Statement
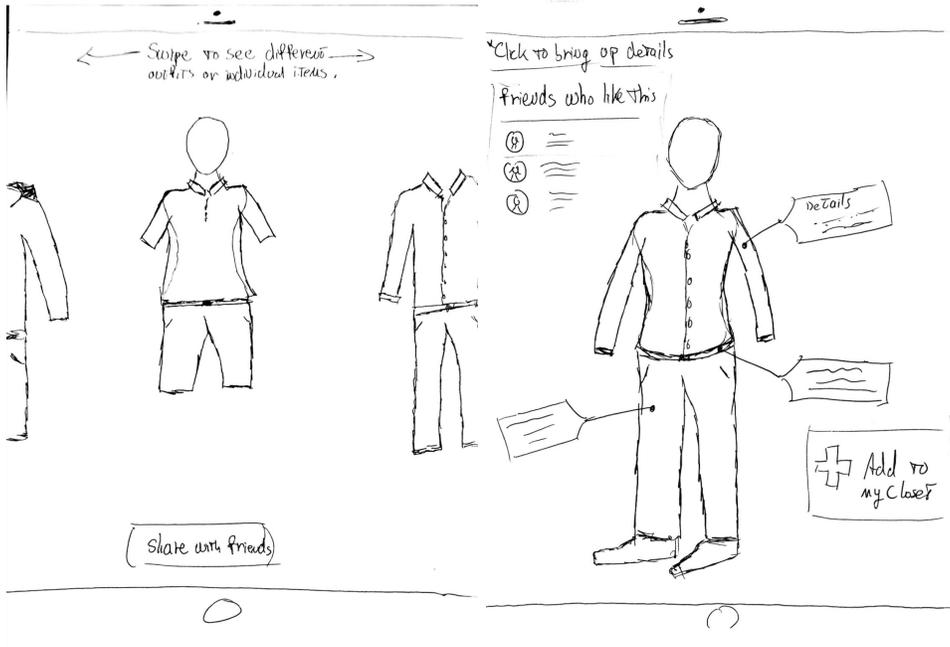
Shopping made easy

Problem/Solution Overview

Shopping for new clothes in a large store can be a daunting task. Time is often wasted going into stores and browsing styles that you are not interested in. How can we easily direct people to what they want while saving time? Using Augmented Reality to quickly show multiple outfits on mannequins in the store's window, shoppers don't even need to enter a store to find what they want. We want our users to feel alleviated from the stress and time-consumption of shopping so that they can focus their energy on what makes them happy.
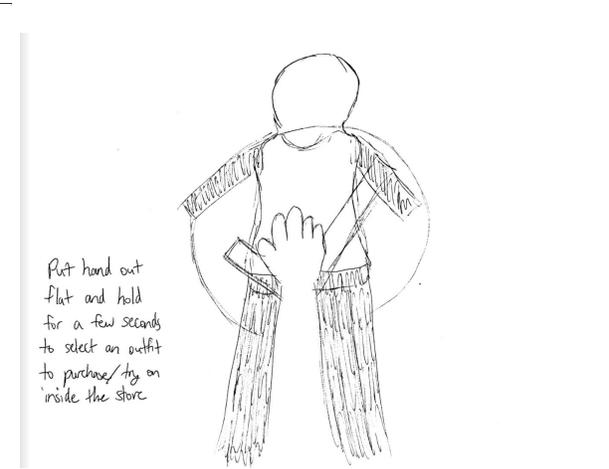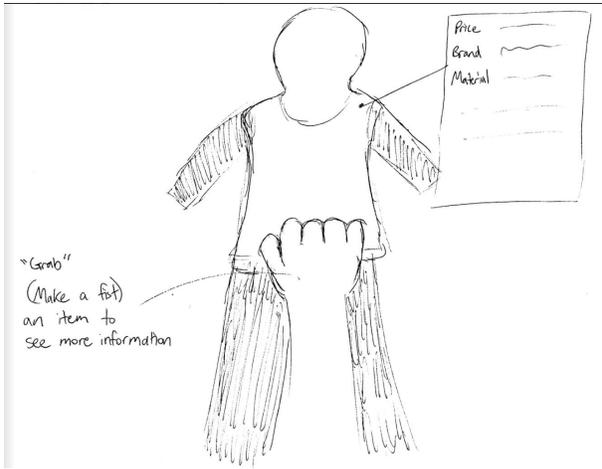
Sketches

Headset

Mobile Application

Screen 1:
Scan the name of the store to begin the AR experience

Click here to shop at this store

GAP

Shop at GAP?

Screen 2:
* Initial overlay screen

Welcome to GAP!

Browse now

or

Select a style

Select a Gender

View Most popular

View sales

Screen 3:
← Swipe to see different → outfits or individual items.

Share with friends

Screen 4:
* Click to bring up details

Friends who like this

Details

Add to my closet

In-Store Projection

Swipe through items to see what the store has to offer

Price
Brand
Material

"Grab"
(Make a fist)
an item to
see more information

Put hand out
flat and hold
for a few seconds
to select an outfit
to purchase/try on
inside the store

Wearable (Watch)

When arm is bent up @ a 90° angle and down quickly, picture of store front shows up with virtual model wearing item, can be rotated with finger.

When window is active, it will vibrate by storefront with most popular/featured item

Rotating wrist swipes through clothes that are available in store

When wrist is shoved forward, prices and information about item pop up

Rotating the wrist in a circle shows nearby stores that are Window enabled

Top Two Designs
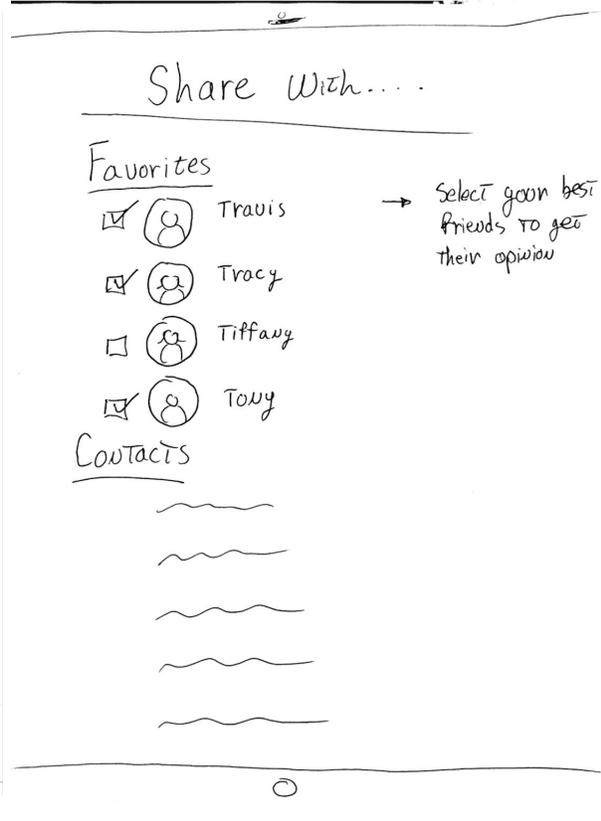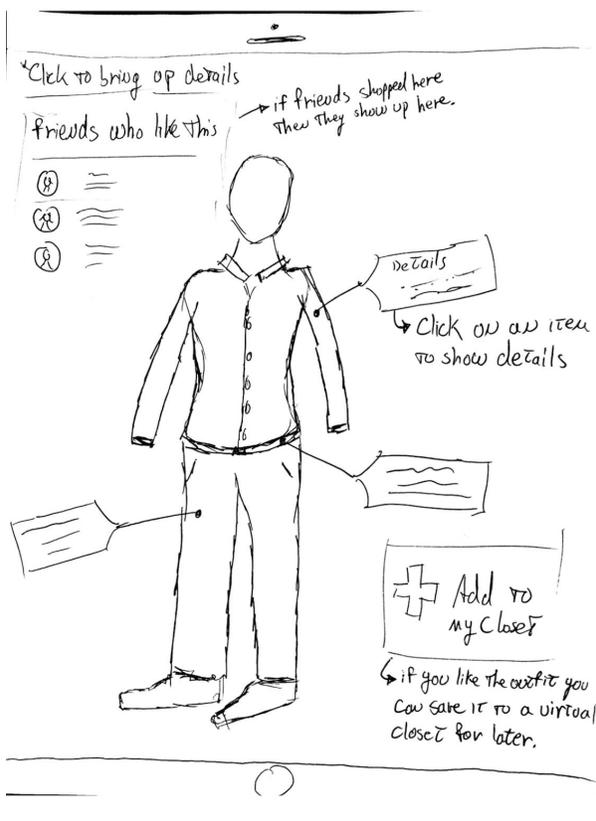
To initialize the app, a user simply points their phone at the store's name. Once processed, the store name will turn into a button and they can click to begin shopping.
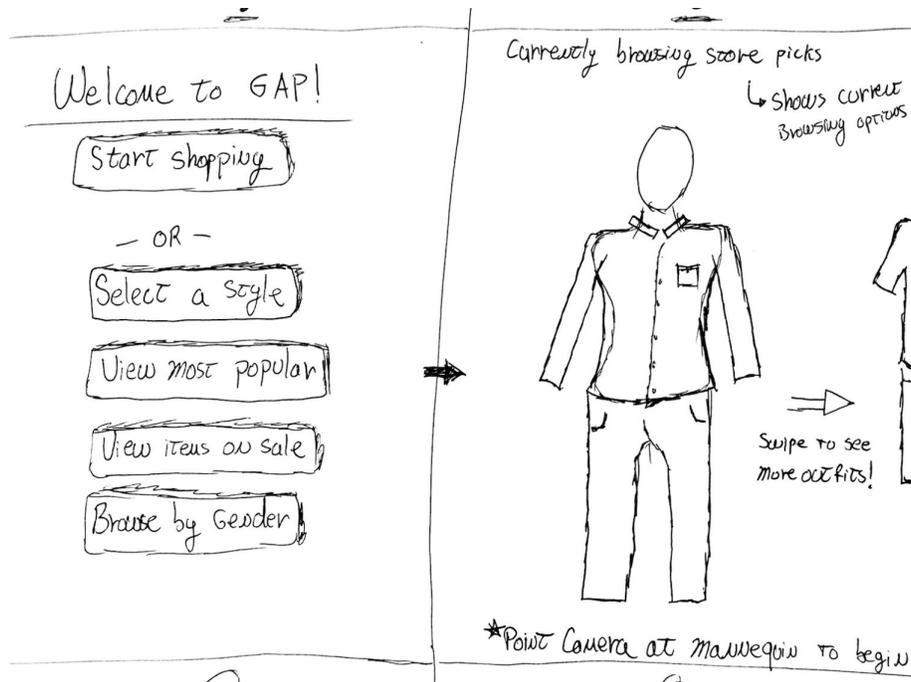
A user has the option to select a browsing category or just see what the store selected. Next, the user begins swiping through outfits or items using AR.

Click to bring up details

Friends who like this

→ if friends shopped here then they show up here.

Details

↳ Click on an item to show details

✚ Add to my Closet

↳ if you like the outfit you can save it to a virtual closet for later.

Share With.....

Favorites
☑ Travis
☑ Tracy
☐ Tiffany
☑ Tony
Contacts

→ Select your best friends to get their opinion

If a user likes what they see, they have a few options. They can click it to get more details, add it to their virtual closet where we store everything they like, or send it to a friend to get their opinion.
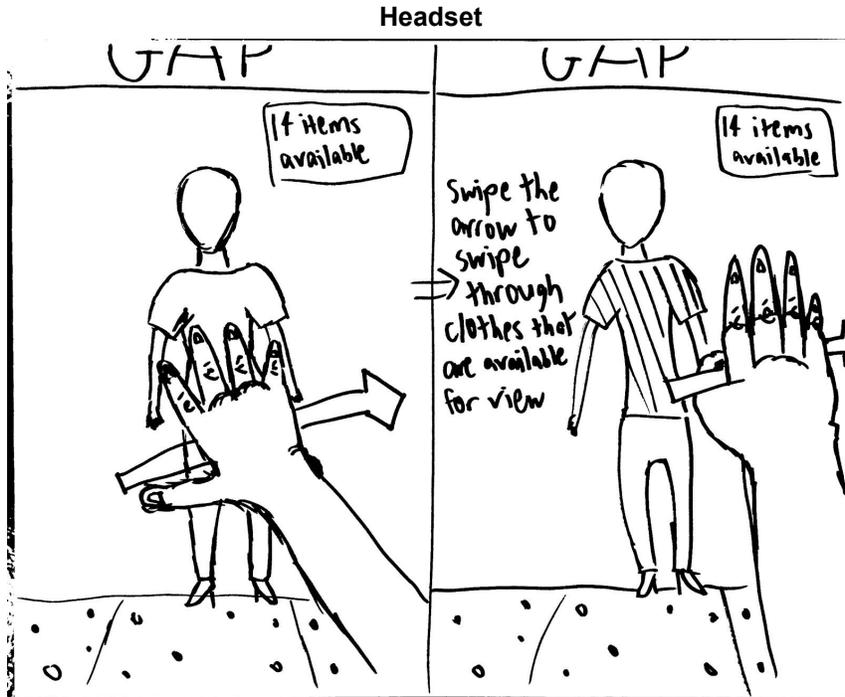
Using the headset, a user will be able to look at a store and in Augmented Reality outfit options will appear on a mannequin.
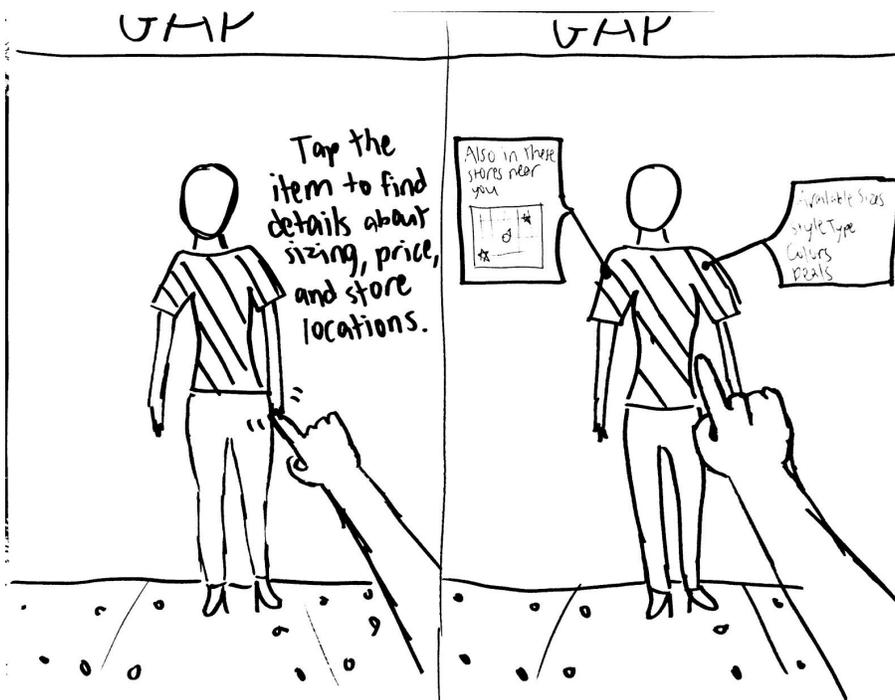
A user can then point on an item to get more details about it. These details would include pricing, sizing, available colors, as well as store locations that have similar items.
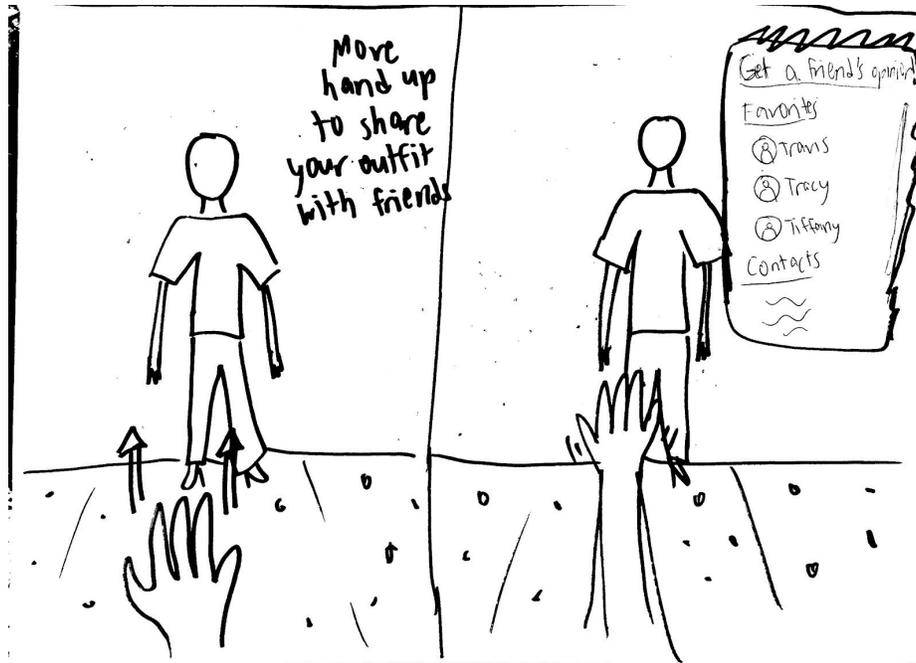
Finally, a hand gesture upwards will give the user the option to share the outfit with their friends to get another opinion.

Selected Interface Design

Reasoning for Selection

Mobile App Design

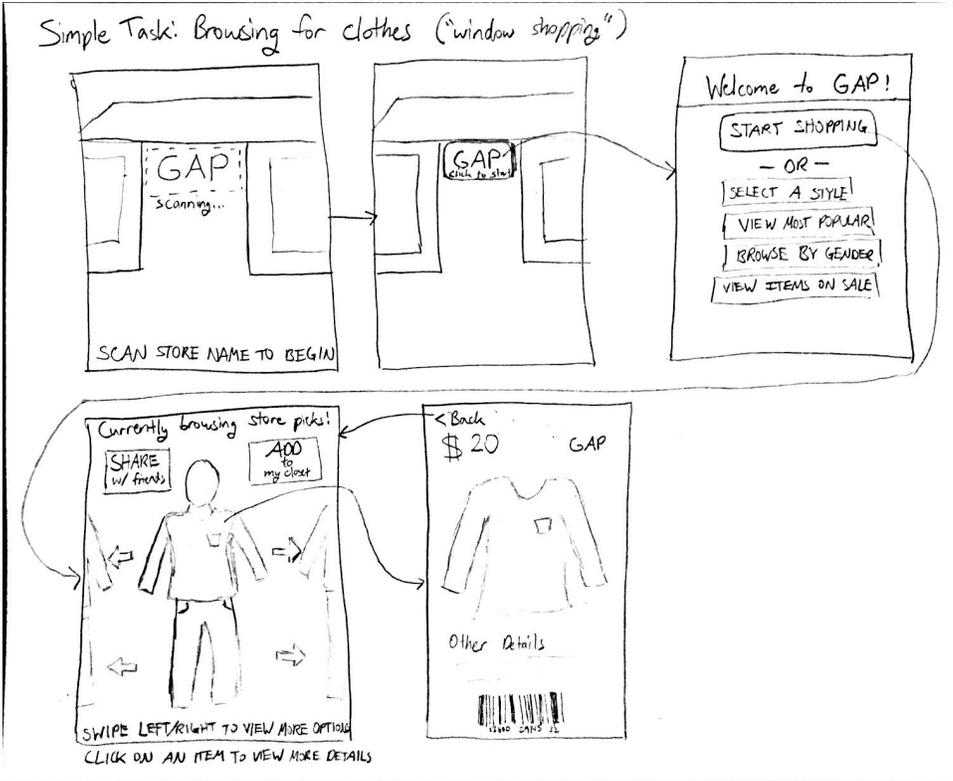| Pros	Cons
- Large percentage of population owns a smartphone - People almost always have their phone on them while shopping - Phones have cameras that we can utilize for augmented reality - Can easily share outfits with friends in contacts - From Michelle's feedback (Prototype #1): Liked the social aspect of the virtual closet prototype - Simple UI, straight to the point - From Lauren's feedback (Prototype #3): Doesn't want to spend a lot of time standing in	- Having a mobile app is not original - Screen may be too small for some people to navigate - Users have to look at phone to see outfit choices

front of the store. Simple UI helps make the process quick.	

Headset Design

Pros	Cons
● More immersive augmented reality experience ● Users don't have to look through a phone ● The sizing/scaling is more accurate ● Can view multiple outfits at once without cluttering view ● Seamless transition since you don't need to pull out phone	● Not many people own AR glasses/headsets ● Technology is still being developed ● Would be waving their hands around in a crowded area like a fool

After evaluating the pros and cons of each of our top two designs, we decided to go with the mobile app design instead of the headset design for our final low-fidelity prototype. This was due mainly to the fact that most people have a smartphone with a camera that we can utilize for augmented reality, and that a lot of the design choices were based off of feedback we got during the needfinding process.

UI Storyboards for Simple, Moderate, and Complex Tasks

Moderate Task: Looking for a new suit for an interview within price range

GAP
Scanning...

SCAN STORE NAME TO BEGIN

GAP
click to start

Welcome to GAP!

START SHOPPING

- OR -

SELECT A STYLE
VIEW MOST POPULAR
BROWSE BY GENDER
VIEW ITEMS ON SALE

CASUAL
FORMAL
ACTIVE
SLEEP

Currently browsing formal items!

SHARE w/friends
ADD to my closet

< Back
$100

SOME OTHER BRAND

Other Details

54521 8345

SWIPE LEFT/RIGHT TO VIEW MORE OPTIONS
CLICK ON AN ITEM TO VIEW MORE DETAILS

Complex Task: Shopping for someone else and asking for opinions on outfits

GAP
Scanning...

SCAN STORE NAME TO BEGIN

GAP
click to start

Welcome to GAP!

START SHOPPING

- OR -

SELECT A STYLE
VIEW MOST POPULAR
BROWSE BY GENDER
VIEW ITEMS ON SALE

♂ MEN
♀ WOMEN

Currently browsing women's clothing!

SHARE w/friends
ADD to my closet

Share with...

Favorites

☑ Ⓡ Travis
☑ Ⓡ Tracy
☐ Ⓡ Tiffany

Contacts

SEND

SWIPE LEFT/RIGHT TO VIEW MORE OPTIONS
CLICK ON AN ITEM TO VIEW MORE DETAILS

Our Prototype

For our prototype we folded a piece of paper to emulate a standard mobile device. We then created multiple scenes out of paper that would emulate every screen of our app. Additionally, we used colored sticky notes to act as notifications and buttons.
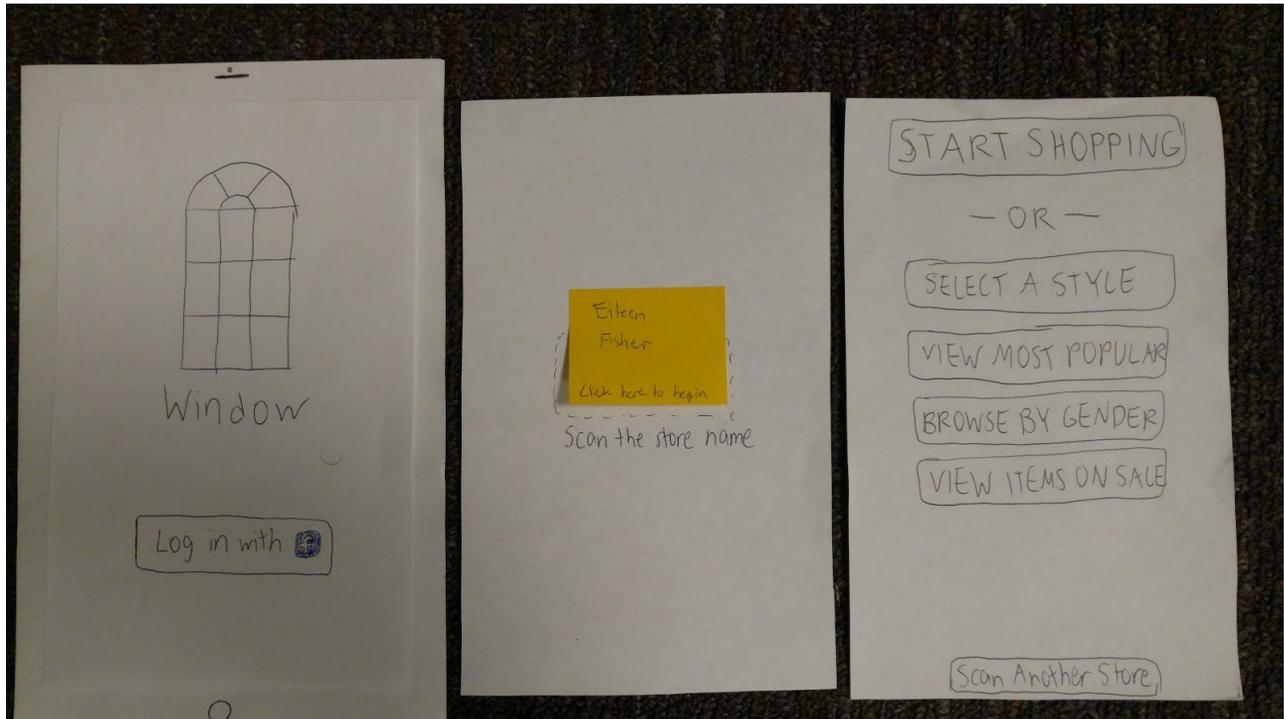

Figure 1

The user experience starts with a page showing our logo as well as an option to log into the app. Once logged in, the first thing the user sees is a prompt to scan a stores name near them. Once a store's name is scanned, the store name with become a button to which they will be able click and access the stores clothing items. They are prompted with a screen that shows browsing options. (See Figure 1)
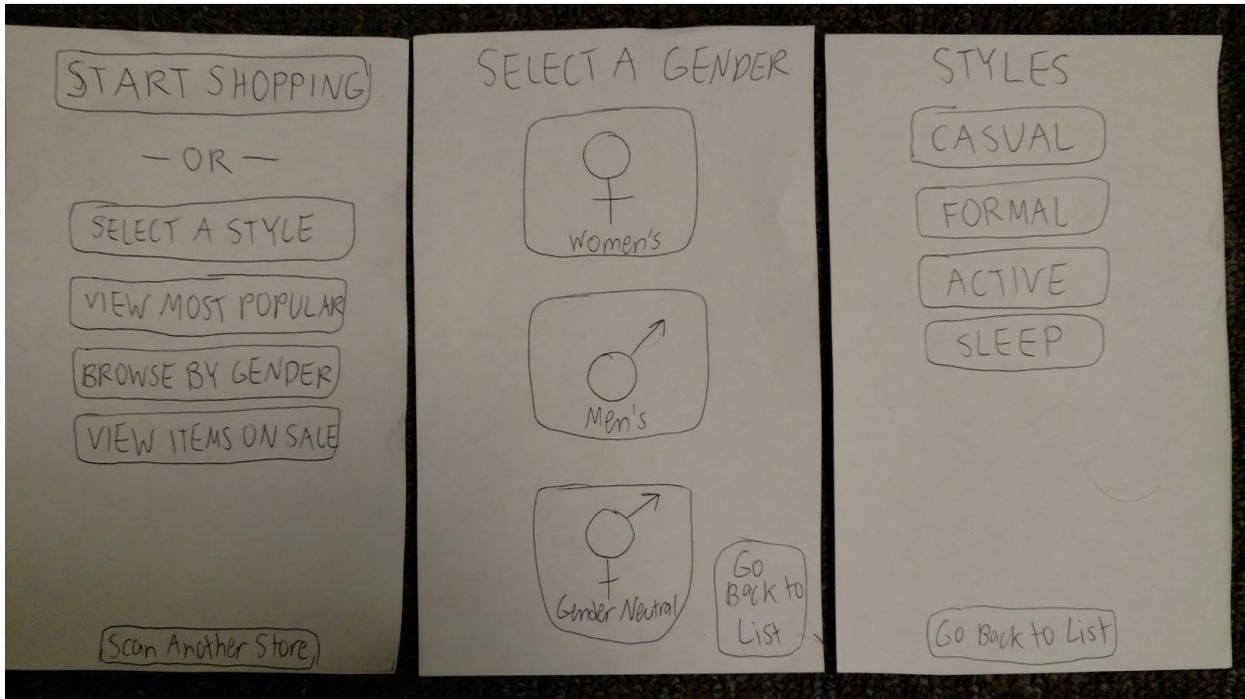
Figure 2

Once a store's name is scanned, they are shown a screen that allows them to do the following: 1) immediately begin browsing, 2) browse by a specific style, 3) browse by gender, and 4) browse by sales. Clicking browse by gender or select a style will in turn take a user to pages where they can input the desired specifications. (See Figure 2)
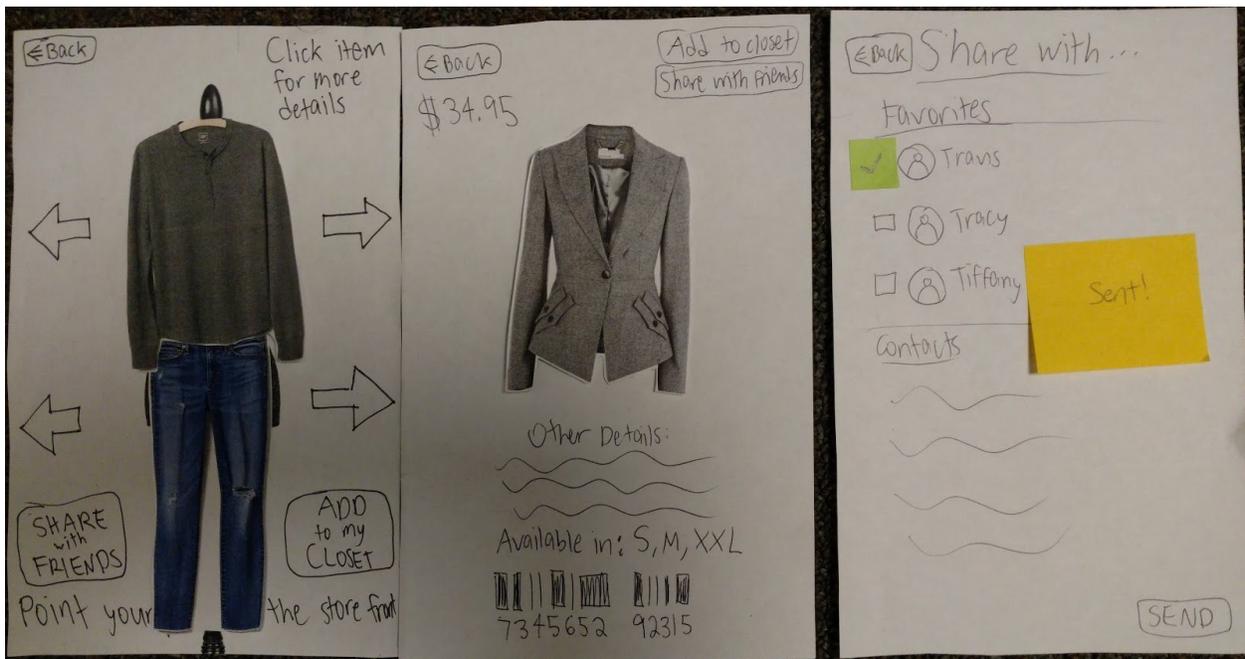

Figure 3

Once the user has determined how they would like to browse clothing at the store they chose, the app transitions to a view with clothes on a mannequin. On this page, we are trying to convey to the user that this
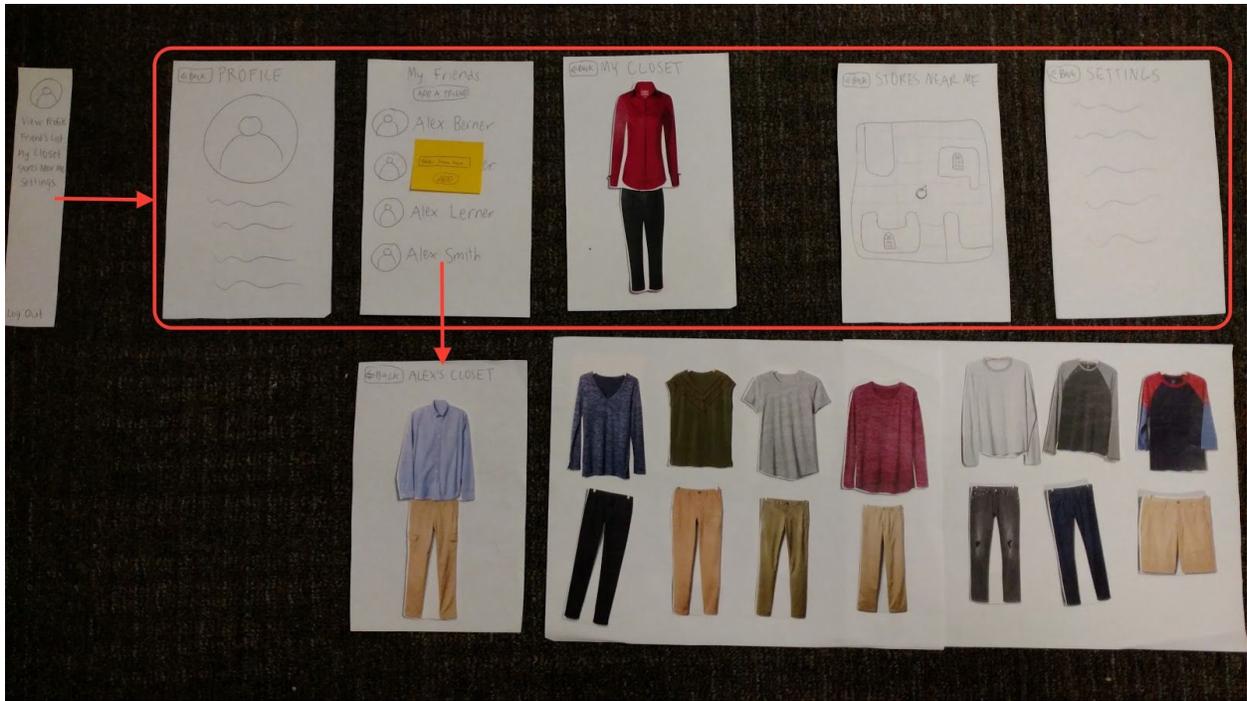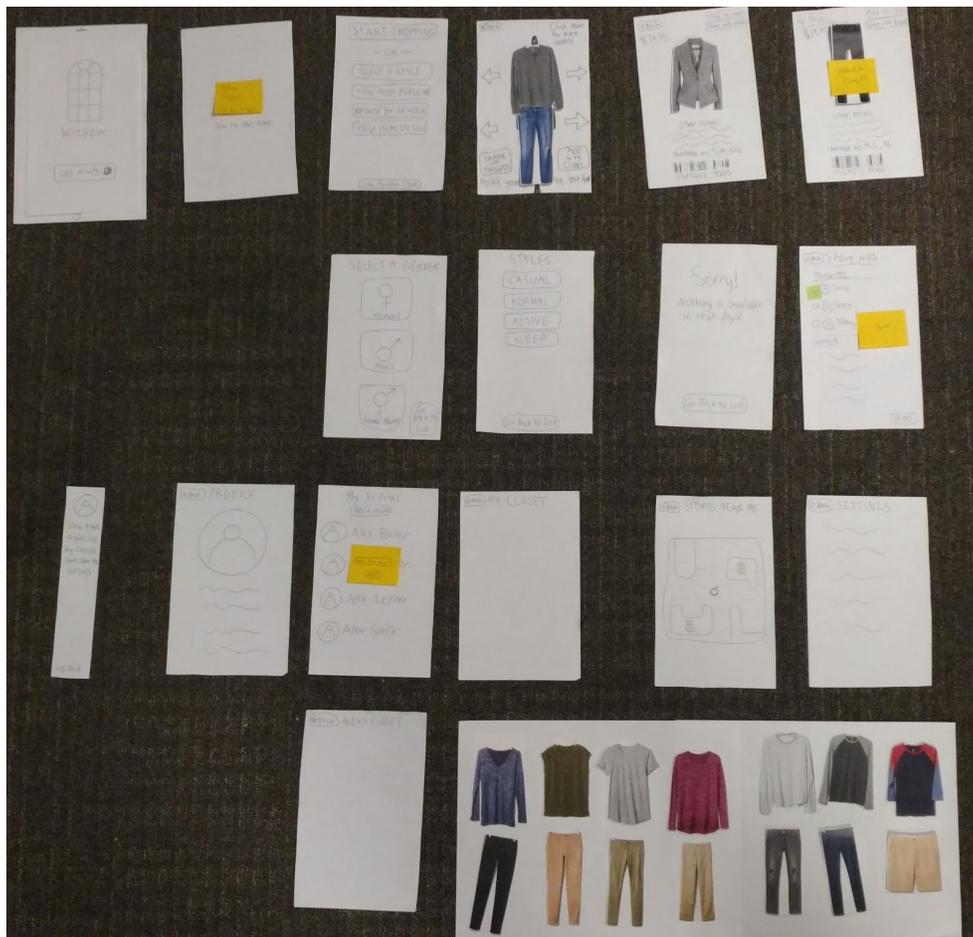
is an Augmented Reality experience where the mannequin on the page is actually viewed through a camera. They have the option to swipe through articles of clothing, to see more information about a particular item, add it their own virtual closet, or to send the outfit to a friend. (See Figure 3)

From here, if a user chooses to click on an item they can see more details such as sizing options, prices, availability, and brand name. If they want to buy the item, a barcode is shown that will allow an employee to quickly identify the item and help them purchase it. (See Figure 3)

Additional to the core features of the application, if the user swipes from the left of the screen a navigation drawer appears that allows the user to check the inventory of their virtual closet, see their friends, change settings, and logout of the app. (See Figure 5)

Figures 4 and 5 are marked up with red arrows showing the natural progression through our application. Figure 4 represents the main workflow of the app while figure 5 shows many of the side features such as the virtual closet and user settings.

Figure 4

Figure 5

Figure 6

Method

Participants:

We met all of our participants at the Stanford Shopping Center. We sought out a diverse set of people that we believed fit our target demographic based on our previous needfinding. In particular, we tried to find people that were window shopping, people that were looking for a specific item, and people that were shopping for another person. We did not offer any compensation to our participants, and they were all happy to take part.

Participant #1: We met Participant #1 while he was waiting for his friend so they could catch their flight back to the Czech Republic. He had been window shopping at the Stanford Shopping Center as he waited.

Participant #2: We met Participant #2 outside of a store while she was waiting for her friend. She had just graduated college and was visiting a friend who was a senior in college. She told us that she was looking for a gift for her friend.

Participant #3: We met Participant #3 outside of another store. She was on a break from work and was window shopping to pass the time.

We do not have photos of the participants since they declined to be photographed; however, they consented to being transcribed.

Environment:

We chose to use the Stanford Shopping Center as our test location due to the abundance of stores and shoppers, and the fact that a shopping center would be exactly the type of place in which our final product would be used. We used the stores around us as a prop when testing our prototype.

Tasks

- Simple Task: Shopping for yourself (ex: just browsing or window shopping)
  - This is a simple task because it only requires the user to click through the interface to view the different clothes.
- Moderate Task: Shopping for something specific (ex: business clothes) that is under 30 dollars
  - This is a moderate task because it requires the user to select a specific style of clothing to view, and also requires them to click on the clothing items to see more details about them like the price.
- Complex Task: Shopping for someone of the opposite gender that needs a specific size, and ask for their opinion on the outfit
  - This is a complex task because it requires the user to browse for clothing by gender, check to make sure the correct size is available, and then share it with the person they are buying it for.

Procedure

For each participant, we introduced ourselves and explained our project and what we we were trying to accomplish. Next, Max showed them how to interact with the paper prototype and explained that they should speak aloud while they do it. Max and Kristen acted as the "computer" and switched the views on the paper phone for the user. Elisa explained to the user what the tasks were and took notes for each participant.

Test Measures

1. Understanding of Augmented Reality - We wanted to check if the user understood which screens were operating in AR and which were not. Since this was a paper prototype, we were worried that the AR aspect of the app would be difficult to grasp and wanted to make sure that they understood they were viewing virtual clothing
2. Areas Where Users Pause - We made note every page that caused users to take a long pause. We believe our app serves a very clear and direct purpose so following this logic the app flow should be direct and straight to the point. Thus, we thought it was important to focus on the areas where the users were confused so we could pinpoint areas to fix in order to aid user experience.
3. Unexpected and Expected Clicks - When making our prototype, there was a clear user flow that we believed should be followed for each task. We wanted to keep track of the number of times the user deviated from what we expected them to do. This includes clicking on buttons that we didn't expect them to click on or not clicking on buttons that we expected them to click on.

Results

Participant 1:

This participant stated that they would like to be able to see the pricing of the outfits they were browsing through without having to click as our UI required. This was an important note for us as it gives us a possible area where we can save users a click by giving them information that they want upfront. However, we don't want to clutter the screen which would be a potential downside. Additionally, this user stated "So when can I see the clothing on myself". He explained that he has heard about technology where he could use Augmented reality to dress himself with virtual clothing and that he wanted to use our app to do that. This participant was interested in seeing the articles of clothing on a mannequin while he was browsing but once he liked the clothing he wanted to use AR to try them on.

Participant 2:

This participant was a little hesitant at first to interact with our paper prototype, but once she got started most of the hesitation went away. However, the hesitation came up again at certain points during the testing, where she seemed unsure of what to click on next. We also noticed that when she completed a task (ie. finding a shirt for an interview), she added the outfit to her closet, which was not what we had intended the closet to be used for. We thought the closet would just be a way to save and view clothes at a later time, rather than being used for items that the user would purchase. This user also happened to not click on the arrows or swipe through the clothing options at all. She just accepted the first outfit that appeared.

Participant 3:

This participant was very enthusiastic while using our prototype and exclaimed "this is so cool!". When we told her to buy clothing that was below the 30 dollar range, she was the only participant to click on the "view items on sale" button. She stated that she wished the app were voice activated because she loved dictating what she was doing and us moving the screen for her. This participant really liked interacting with our app, but she didn't seem to fully grasp the Augmented Reality concept of it. When the app told her to point the phone at the storefront, she thought it was just to take a picture of a mannequin in the storefront to overlay clothes onto, rather than using Augmented Reality to overlay clothes on a mannequin in real time.

Discussion

We were pleased with the participants that used our prototype as we believe they are representative of the target demographic. It was comforting to know that they each stated they would use an Augmented Reality application like this one to help them while window shopping.

We noticed that when users would scan a store name to initialize the app and begin shopping, it appeared that their next logical progression was to immediately start the shopping process. Instead, our prototype attempted to format the store name as a virtual button that they would click on to then begin shopping. This leads us to the conclusion that the button is an unnecessary step in the user flow and detracts from the user experience.

Another issue we noticed with two of our participants is that they didn't tap on the arrows on the screen or swipe the clothes to the side to view other options. This was concerning to us because that was the main user interaction we had in mind for the app: to be able to swipe through the available clothing and view different outfit combinations. We are not sure if this was a result of having to use paper instead of a real app, but moving forward, we will need to find a way to clearly convey that the clothing items can be swapped out for different ones by swiping the current ones away.

We also noticed that the closet feature of our app was not used as we had intended. Two of our participants added clothes to their closet within the app instead of trying to purchase it. Our current solution to purchase an item is to display a barcode that they could have an employee of the store scan to locate the item(s) that they would like to purchase. However, this may have been unintuitive, since none of our participants acknowledged the barcode. On the other hand, this could be a valid solution and we may just need a cleaner way of conveying to the user that this is the final stage of the shopping flow. Moving forward, we will need to come up with a clearer way for users to purchase an item they are interested in.

Word count: 2477

Appendix

Script

<u>Introduction:</u>

Thank you for volunteering your time to try the demo of our app, Window. Our app is designed to make shopping easier for customers by using Augmented Reality to enhance their shopping experience. We will ask you to do a series of three tasks with our app. Please sign this consent form before we begin.

<u>Gather Info:</u>

What is your name?
Where are you from?
What is your occupation?
What brings you here today?

<u>Directions:</u>

This is a low fidelity prototype of what our app could potentially look like. Please interact with our paper prototype as if it was your own personal smartphone. One of us will act as the "computer" in your phone as you navigate your way through our app. While using the app, please think out loud as it will help us gauge your experience, which will be helpful towards our development of this product.

I will provide a demonstration of our app flow and how we describe it.

<u>Demo:</u>

(display app with login screen)
"This looks like a login page. I will click login to get into the app"
(transition from login page to page with scan view)
"What happens if I swipe from the left side of the screen"
(Display sidebar)
"Oh cool looks like a settings tab of some sort"

<u>Simple Task</u>
● Shopping for yourself (ex: just browsing or window shopping)
<u>Moderate Task</u>
● Shopping for something specific (ex: business clothes) that is under 30 dollars
<u>Complex Task</u>
● Shopping for someone else and asking for opinions on outfits

Notes

Participant 1:
- From Prague, here for a meeting
- Window shopping while he waits for plane
- Seemed excited about seeing items from outside
- Questions about scanning store
- Selected a style
- Usually casually dressed for interviews
- Joked about voice activation
- "Lag is an issue"
- If you see clothing, should see price
- Wanted to see price without having to click item
- What to do if it's not in your size?
- Got to the select gender easily
- He said he could just go online to do this, but then he realized it was augmented reality
- He wanted to see himself wearing the clothing in a mirror

Participant 2:
- She knew to start shopping right away
- She tried adding to the closet at the end
- Selected formal
- Added to closet, went back, then checked price
- Browsed by gender right away
- Immediately shared with friends
- Works at nordstrom
- Thinks it's a very cool app
- She never tried clicking arrows or swiping to see other clothing options

Participant 3:
- Had to explain camera aspect a lot
- "This is so cool!"
- She wanted to see items on sale
- Added things to closet
- Browses by gender and selects to share with friends
- Made a joke about wishing it were voice activated
- Said it was "nifty" and that she would do it
- Also didn't swipe through, initially thought that AR w/ mannequin was just taking a picture

Consent Form

The Window 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 Window. 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 (Kristen Law, Max Freundlich, and Elisa Lupin-Jimenez) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the Window experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____

Participant Number _____

Date _____

Signature_____

Witness name _____

Witness signature_____