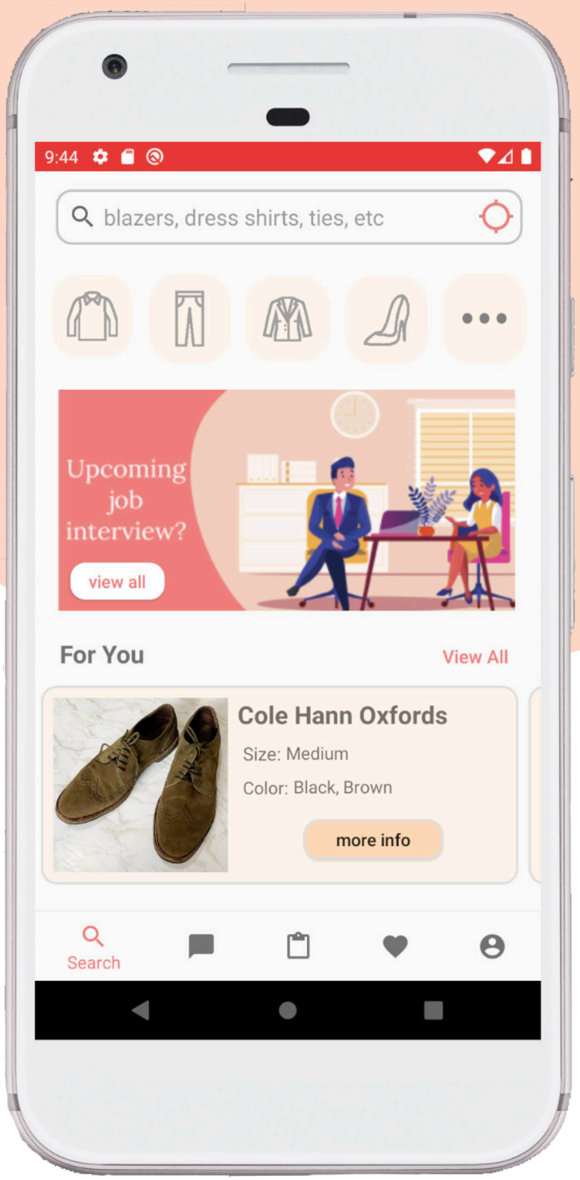
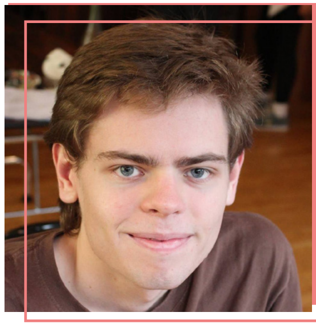
Attirely

A peer-to-peer donation platform providing equitable access to professional attire.



The Team

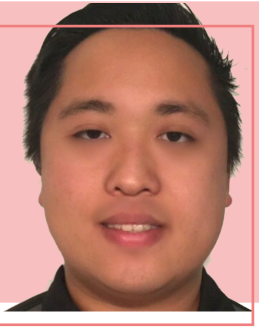


Jack Boreczky

Isabel Daniels

Bobby Zheng

Oscar Chan



Affton Maryland

Project Description

Lack of access to professional clothing leads to unfair evaluations for special events such as job interviews. Attirely provides a peer-to-peer clothing donation platform that connects donors to job seekers. Attirely allows users to search through postings of clothing based on location and desired type of clothing. Featuring a map view to quickly see nearby items. The posting function utilizes the Google Cloud Vision API to automatically tag uploaded images and populate selection fields to simplify the donor's user experience. Lastly, the application features a chat function that allows direct communications between donors and recipients.

Video https://www.youtube.com/watch?v=3d9sL-LJeiM

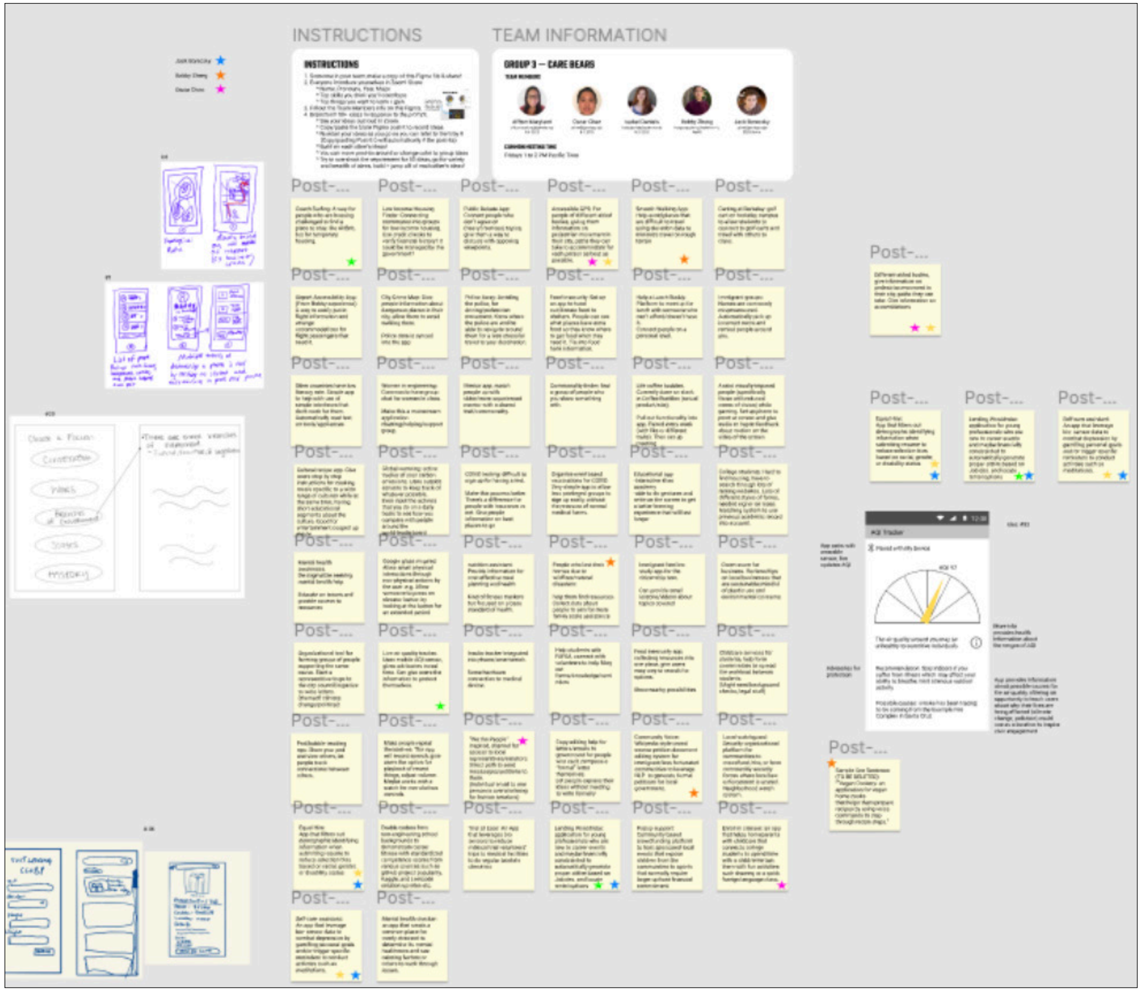
Kaleidascope https://kaleidoscope.hybrid-ecologies.org/portfolio/l33t0Dwu6x2KLjtzGfHa

Firebase Database
https://console.firebase.google.com/u/1/project/attirely-3e621/database/attirely-3e621/data

https://github.com/cs160-berkeley/project-fa2020-care-bears

Brainstorm Process

Our Brainstorming process started during a group session in which we formulated 50 initial ideas that were inspired by several inequality issues (physical disability, mental health, community-based mutual help, etc.) we've seen around us.



https://www.figma.com/file/sNKEycZe89amkaO4xlqYKF/CS-160-TEAM-BRAIN-STORMS-team-3?node-id=0%3A1

During the process-of-elimination, each team member picked one of the 50 ideas to draw an initial rough sketch. Additionally, each team member had three votes to pick their top three ideas. Then we picked top 5 ideas by vote for further team discussion.

After the first round of brainstorming, we pick the following five ideas:

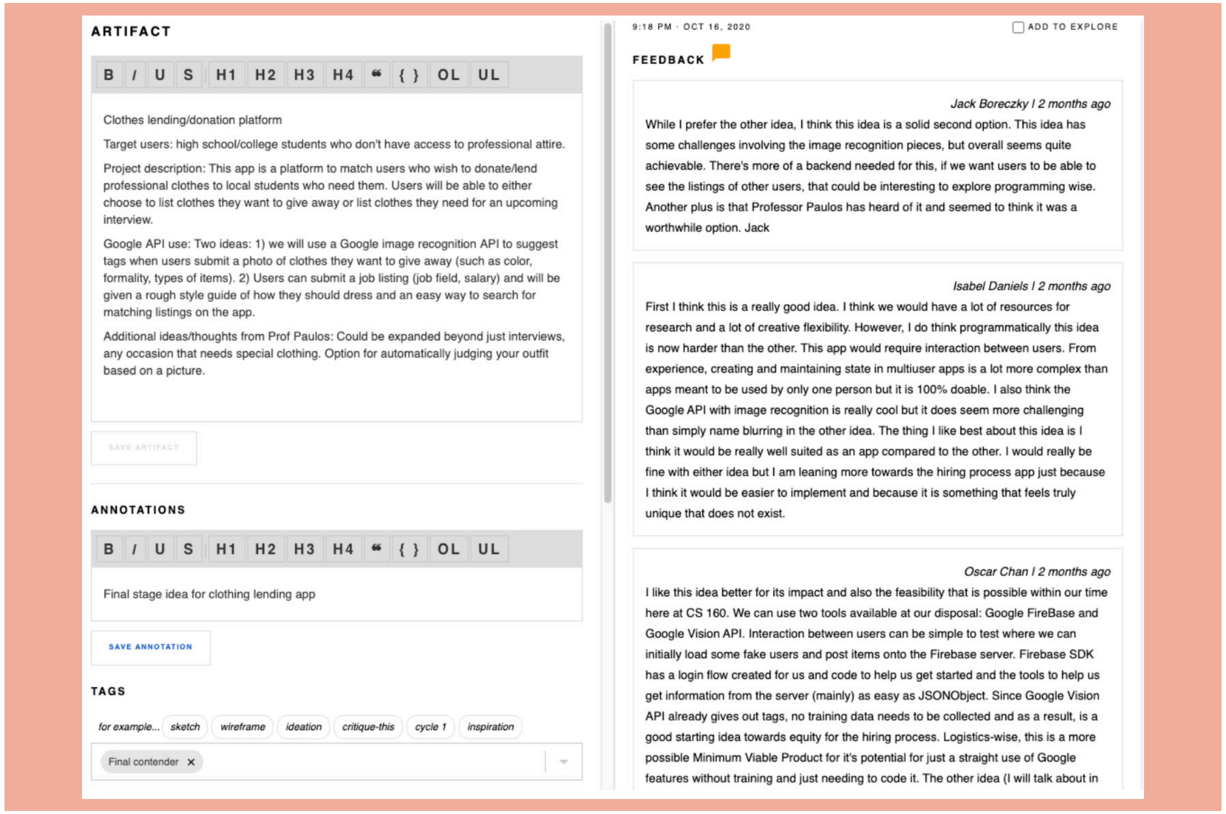
- Pedestrian movement assistant app for individuals with physical disabilities
- Equal Hire App that helps anonymize candidate perceived ethical information
- Self-care assistant that leverage bio-sensor data to combat depression
- Lending wardrobe that helps young professionals to automatically generate proper attire based on job description and local rental options
- “Vegan Cookery” an application for vegan home cooks to prepare ceipes by using voice commands

Furthermore, we narrowed down to the top three favorite ideas based on feasibility of the project, applicable API available, and most importantly, our passion/feelings.

After another two rounds of group discussions we felt very strongly about inequality in the job market and hiring process. Thus, we narrowed down to two ideas that fit into that category:

1) A clothing lending/donation application

2) A training application for small/medium sized business to refine their recruiting process to be more inclusive



ARTIFACT

Clothes lending/donation platform

Target users: high school/college students who don't have access to professional attire.

Project description: This app is a platform to match users who wish to donate/lend professional clothes to local students who need them. Users will be able to either choose to list clothes they want to give away or list clothes they need for an upcoming interview.

Google API use: Two ideas: 1) we will use a Google image recognition API to suggest tags when users submit a photo of clothes they want to give away (such as color, formality, types of items). 2) Users can submit a job listing (job field, salary) and will be given a rough style guide of how they should dress and an easy way to search for matching listings on the app.

Additional ideas/thoughts from Prof Paulos: Could be expanded beyond just interviews, any occasion that needs special clothing. Option for automatically judging your outfit based on a picture.

ANNOTATIONS

Final stage idea for clothing lending app

TAGS

for example... sketch wireframe ideation critique-this cycle 1 inspiration

Final contender ×

9:18 PM · OCT 16, 2020

FEEDBACK

Jack Boreczky | 2 months ago

While I prefer the other idea, I think this idea is a solid second option. This idea has some challenges involving the image recognition pieces, but overall seems quite achievable. There's more of a backend needed for this, if we want users to be able to see the listings of other users, that could be interesting to explore programming wise. Another plus is that Professor Paulos has heard of it and seemed to think it was a worthwhile option. Jack

Isabel Daniels | 2 months ago

First I think this is a really good idea. I think we would have a lot of resources for research and a lot of creative flexibility. However, I do think programmatically this idea is now harder than the other. This app would require interaction between users. From experience, creating and maintaining state in multiuser apps is a lot more complex than apps meant to be used by only one person but it is 100% doable. I also think the Google API with image recognition is really cool but it does seem more challenging than simply name blurring in the other idea. The thing I like best about this idea is I think it would be really well suited as an app compared to the other. I would really be fine with either idea but I am leaning more towards the hiring process app just because I think it would be easier to implement and because it is something that feels truly unique that does not exist.

Oscar Chan | 2 months ago

I like this idea better for its impact and also the feasibility that is possible within our time here at CS 160. We can use two tools available at our disposal: Google FireBase and Google Vision API. Interaction between users can be simple to test where we can initially load some fake users and post items onto the Firebase server. Firebase SDK has a login flow created for us and code to help us get started and the tools to help us get information from the server (mainly) as easy as JSONObject. Since Google Vision API already gives out tags, no training data needs to be collected and as a result, is a good starting idea towards equity for the hiring process. Logistics-wise, this is a more possible Minimum Viable Product for it's potential for just a straight use of Google features without training and just needing to code it. The other idea (I will talk about in

Idea finalization by vote with feedbacks in Kaleidoscope

In the last step to finalize our choice, each team member had one vote to pick their favorite idea with rationals and explanations on Kaleidoscope.

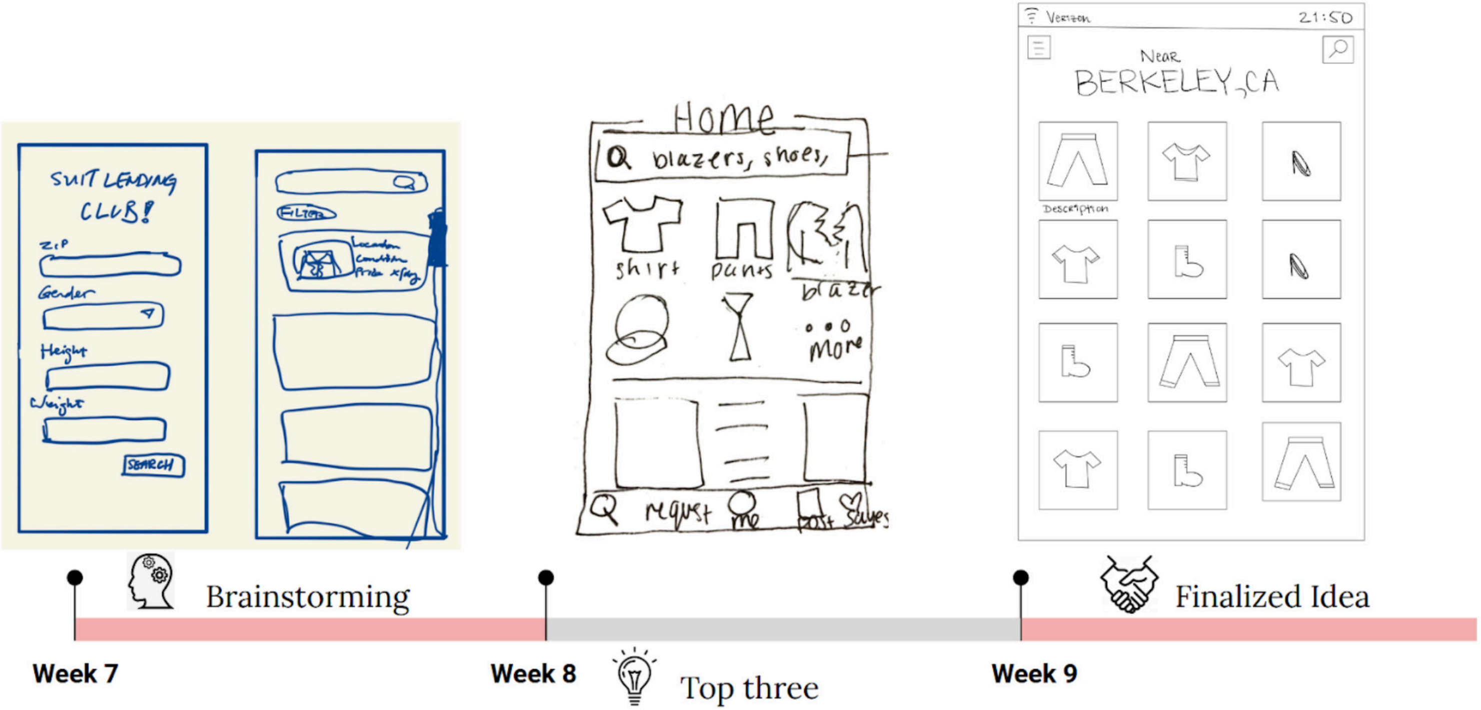
Idea finalization by vote with feedbacks in Kaleidoscope

In the end, we agreed on clothing lending/donation ideas. The idea was really compelling to us because we believe it can bridge the gap between job seekers and donors. And can enable us to embed additional features such as job description based recommendation as an advanced feature. Additionally, since one of the team members is part of the Engineering Student Services department, we think this idea can allow us to conduct more thorough and insightful research. Lastly, the idea can also be empowered by various types of API such as NLP sentiment, NLP classification or Cloud vision. We think based on these reasons and tools, we can build out a meaningful and impactful app.

Intermediate & Final Design Sketches

Attirely was the original idea we chose to highlight from the 50 idea brainstorm. This transitioned into several iterations of ideas while we had team discussions and got peer feedback. Once we knew it would be our final app idea, the wireframes and prototype came quite naturally out of the user interviews and team feedback. For the screens the prototype included, it was translated directly into the final application.

We had our first sketch of what would eventually become Attirely in week 7 as part of the brainstorming process. During the process of narrowing down our ideas, we started to add in ideas for features, moving towards the idea of having clothing icons for filtering. In week 9, we submitted our proposal for the finalized idea which included the idea for a grid view screen of clothing items.



Brainstorming

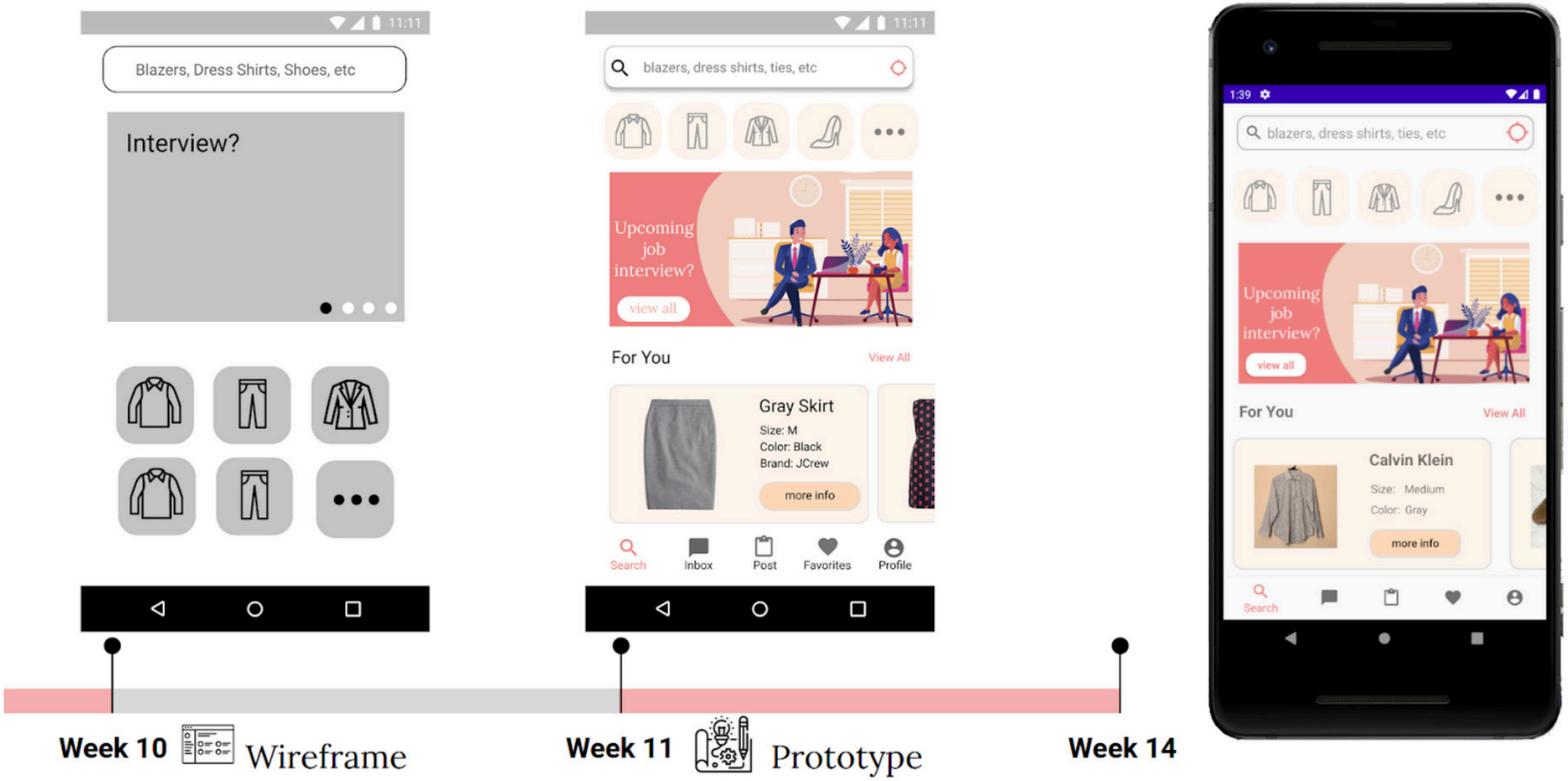
Finalized Idea

Week 7

Week 8

Top three

Week 9



We produced a set of wireframes as part of the design process for the low-fidelity prototype, these directly grew into the submission for the prototype. The navigation bar from our early design sketches was put into the prototype, along with the idea of having clothing type icons for filtering. We moved away from the grid view for posts and created scrollable lists. The implementation of the final Android app was very similar to the Figma prototype, with the navigation bar, boxes for clothing posts, and color scheme.

Scenarios

Professional attire is pricey and not frequently utilized. However, visual representation of a candidate can be a deciding factor for one's future. We made Attire to promote community based cloth lending and empower donors and job seekers for an ease of experience.

Use Case Scenarios:

1. Searching for a particular type of professional clothing:

Since our target group are young professionals who are new to the job market and those who may have lost their jobs during the pandemic, our search function with various filtering options can help users to quickly narrow down to the type of clothing they need for the upcoming interviews.

2. Donating any extra clothing in the closet:

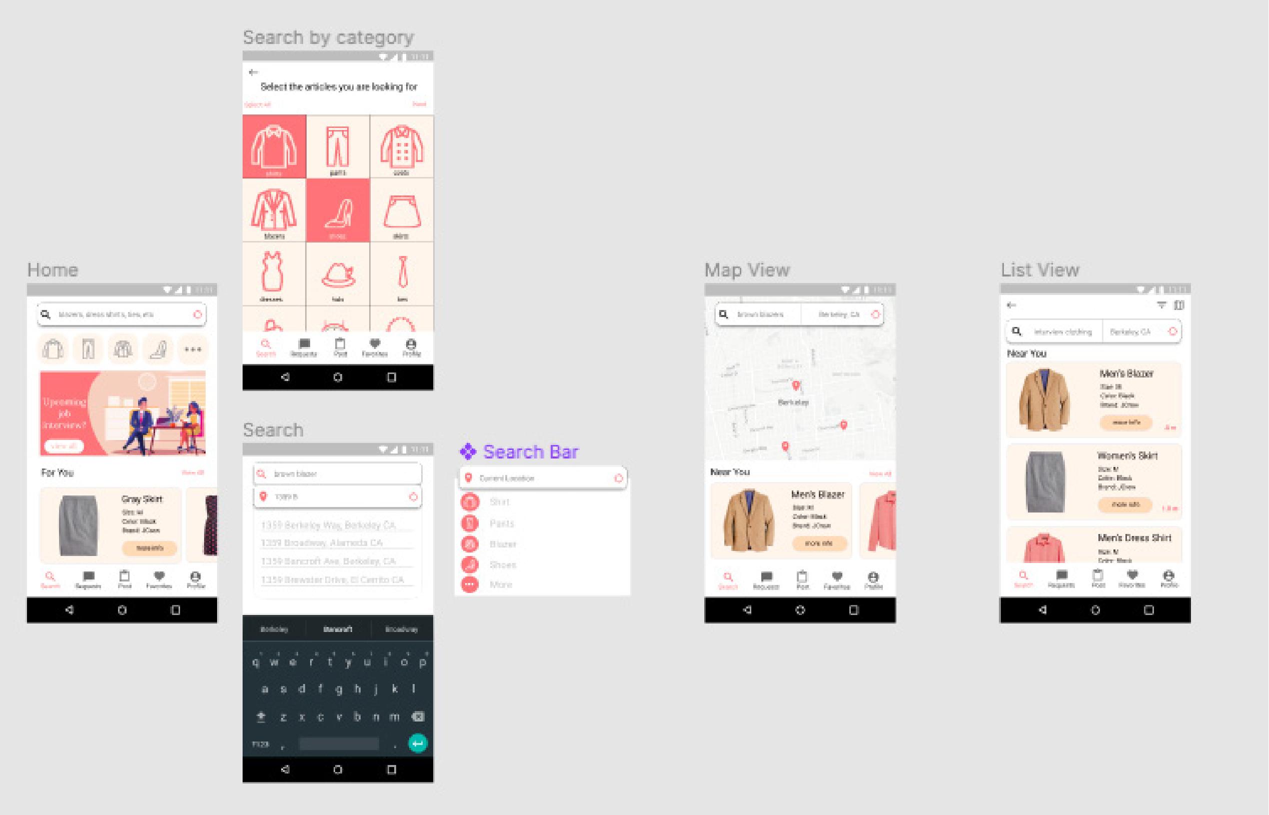
As we learnt from our user research study, when a donor wants to post a piece of clothing, he wants to be able to quickly get the process done. Thus we designed the application to be able to automatically detect image tags to display and auto select related type, color, gender etc. information for our donor to easily put it into our database.

Given the main goal of our app is to promote inclusive sharing of clothing within communities, we want our donors to spend less time with the app but to provide more supply of clothes, while providing a nice user experience to keep the job seekers spending time on the app and search for their ideal clothing for their potential life changing event.

Wireframes

We wanted to create some initial User Interface design choices in order to get us started in thinking about what features and setup we need to prepare and create for the final design that we are going for. Driving this process was thinking about the basic features needed for our app, like logging in, uploading, and viewing posts, and what other additional features our initial interviewees and potential users believed were more important, like wanting to be able to search posts and choose by location.

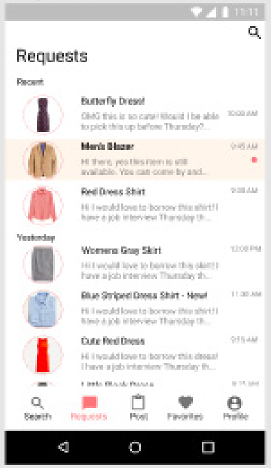
The three primary tasks we identified as a result of our interviews were 1). Location based searching of available cloth 2). Easily Posting options for donators or lenders 3). Convenient messaging features between users



- Location based search option: Our users indicated they had used on-campus service such as the success closest on campus to rent professional interview clothing and indicated the known location and proximity matters when it comes to getting the clothing they needed for an interview. Additionally, since the preparation of the interview would likely be time consuming and stressful, any certainty or reduced research effort would help alleviate that.
- Easily posting options: Several of our interviewed interviewees expressed the willingness to be both a lender and a consumer for this application if made available. Additionally from our competitive analysis, peer-to-peer lending normally would require a credibility system that forms a trusted lending-and-borrowing community and possibly only allow donating or lending as a precondition for additional borrowing. Thus, we are thinking the posting option should be made widely available and easily accessible for users to post their available clothing.
- Convenient messaging: Our interviewees expressed the need for a platform supported messaging system for communication between lenders and borrowers to send or receive requests as this messaging system would help make separation between his/her personal social network and making tracking of existing requests easily.

By listening to potential users of our application, we were able to determine what was important for our initial design choices we needed to do in order to get the application design started. In addition to the basic components of the application for Logging In, Posting, and Viewing Posts; our initial interviews helped us identify three important tasks to start on: 1). Location based searching of available cloth 2). Easily Posting options for donators or lenders 3). Convenient messaging features between users.

Requests



Requests

Recent

Butterfly Dress! 10:00 AM
OMG this is so cute! Would I be able to pick this up before Thursday?...

Men's Blazer 9:45 AM
Hi there, yes this item is still available. You can come by and...

Red Dress Shirt 9:30 AM
Hi I would love to borrow this shirt! I have a job interview Thursday th...

Yesterday

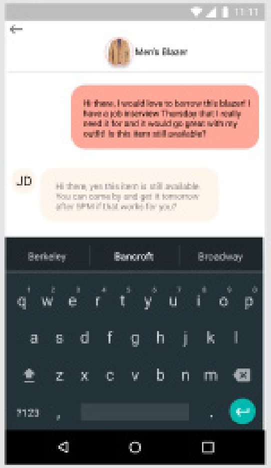
Womens Gray Skirt 12:00 PM
Hi I would love to borrow this skirt! I have a job interview Thursday th...

Blue Striped Dress Shirt - New! 11:30 AM
Hi I would love to borrow this shirt! I have a job interview Thursday th...

Cute Red Dress 9:15 AM
Hi I would love to borrow this dress! I have a job interview Thursday th...

Little Black Dress 9:15 AM

Chat



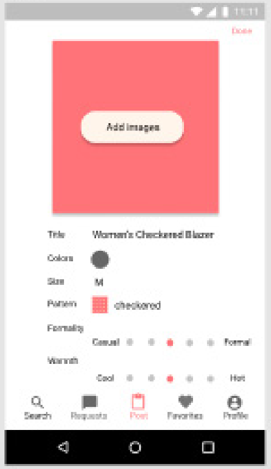
Men's Blazer

Hi there, I would love to borrow this blazer! I have a job interview Thursday that I really need it for and it would go great with my outfit! Is this item still available?

JD

Hi there, yes this item is still available. You can come by and get it tomorrow after 5PM if that works for you?

Post

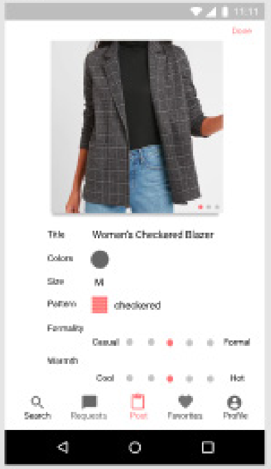


Done

Add Images

Title Women's Checkered Blazer
Colors ●
Size M
Pattern ▨ checkered
Formality
Casual ● ● ● ● ● Formal
Warmth
Cool ● ● ● ● ● Hot

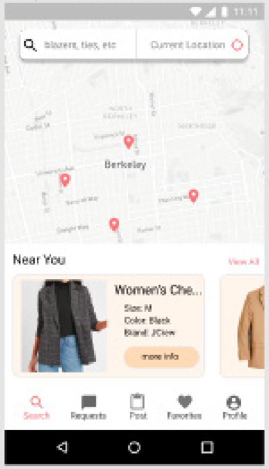
Post



Done

Title Women's Checkered Blazer
Colors ●
Size M
Pattern ▨ checkered
Formality
Casual ● ● ● ● ● Formal
Warmth
Cool ● ● ● ● ● Hot

Map View - Results



blazers, ties, etc
Current Location

Near You View All

Women's Che...
Size: M
Color: Black
Brand: JCrew
more info

User Studies, Details, and Findings

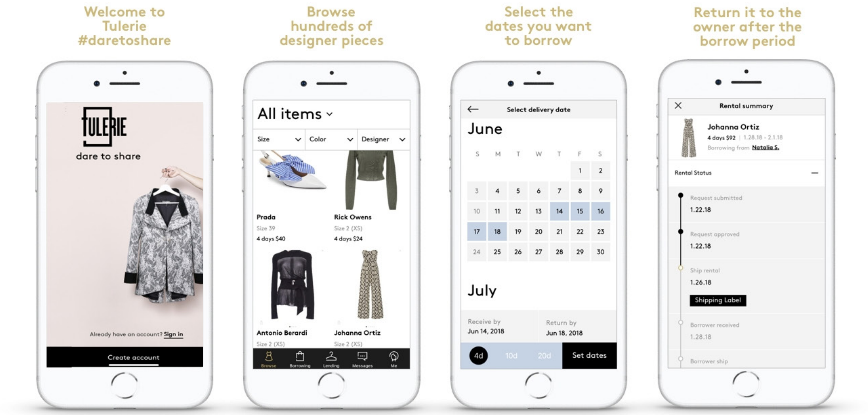
Our user group focused on college students preparing for interviews and other formal events, however, our app encompasses several different user groups. We interviewed two college students that attend UC Berkeley's College of Engineering.

One of the students we interviewed is a female senior and is currently looking for full time employment. The other student we interviewed is a female freshman who is on the hunt for internships and scholarships. Both of them normally shopped for clothes from department stores and those can be a hit or miss when it comes to professional attire. The senior has utilized the Success Closet in the past for interviews, which is a resource offered by Engineering Student Services but found them to be ill fitting because of her frame. The freshman has never been on campus unfortunately but mentioned that if she ever had interviews she would just borrow out of her mother's closet because they are the same shape and it is less expensive than buying a whole suit for a 30 minute interview once every 6 months or so. Both of the students expressed interest in the app and emphasized being able to see what clothing was offered and the possibility of having the person wear it in a photo as that would be a better indicator of how the item would look and fit in use. Given more time, this is definitely something that we could have/wanted to implement and would just require a few tweeks to the API as the API loves to focus on people and their features. Both expressed their opinions toward loaning items versus giving them away entirely and they would just prefer to give it away and not have to worry about whether or not people would give it back. The freshman also emphasized that she wanted a great customer experience/interaction with the giver and receiver so a chat system would be necessary. Another feature that the freshman mentioned that I think would be a great addition if we were to continue the project is a forum where users can post their entire outfit and what occasion they are using it for and people in the community could comment and give feedback.

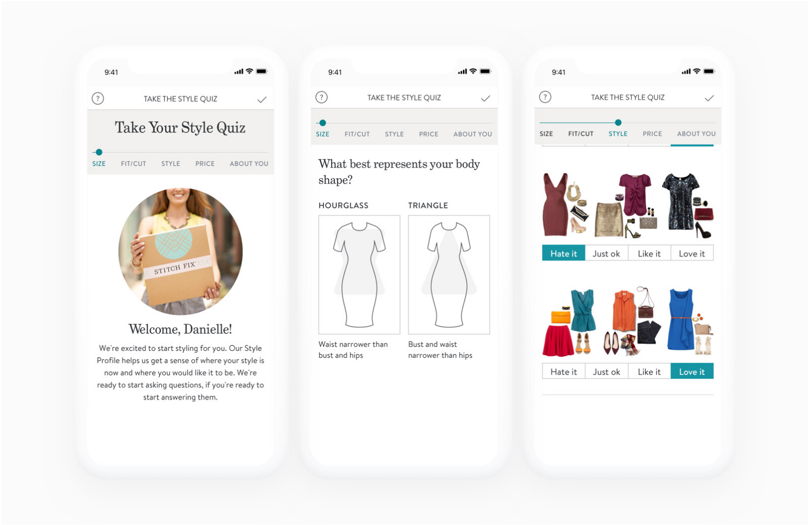
After general feedback from interviewees and peers, we found that donors did not want to complete a long and arduous process of posting their clothing and filling out lots of information. It would become tedious and a pain and would likely cause users to be less likely to participate in it. We considered ways to lessen that burden and decided upon using the Google Cloud API so that it could fill in as much information as possible when users/donors snap a photo of the clothing and all that's left to do is confirm the information and post.

Competitive Analysis

Current competitors Applications in the Android and iOS market seem to offer different varieties of clothing renting and community peer-to-peer helping options. However, most apps are profit driven or not explicitly for clothing.



Tulerie: Tulerie is a peer-to-peer lending cloth app that emphasizes on an invitation-only highly trusted community for high end clothing and accessories.



Welcome, Danielle!

We're excited to start styling for you. Our Style Profile helps us get a sense of where your style is now and where you would like it to be. We're ready to start asking questions, if you're ready to start answering them.

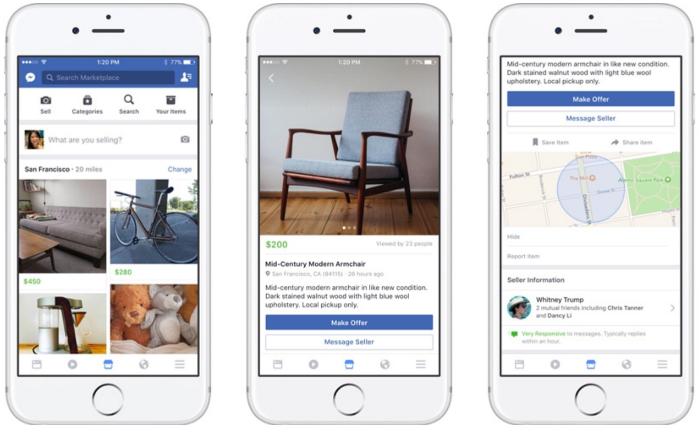
What best represents your body shape?

Waist narrower than bust and hips

Bust and waist narrower than hips

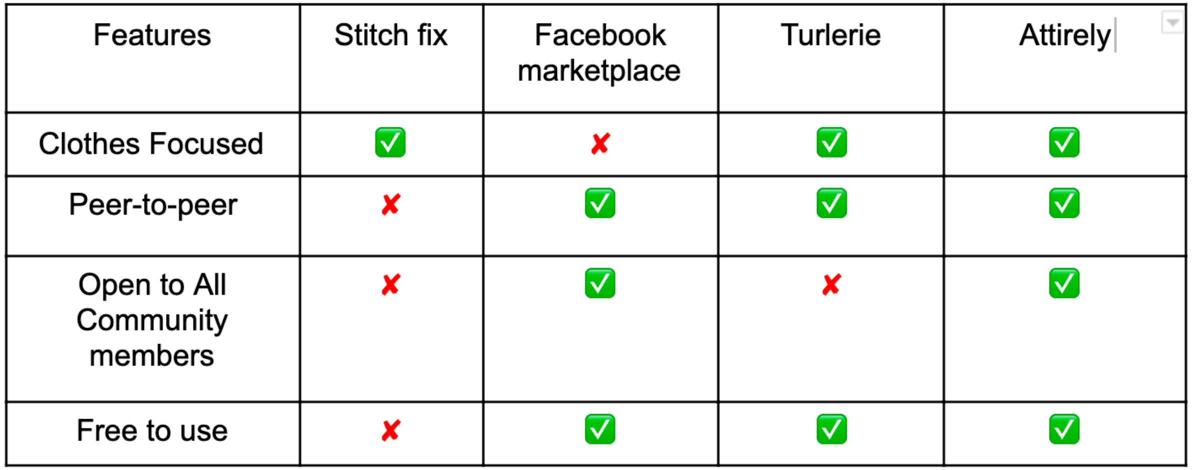
Stitch fix:
Stitch fix is a subscription based clothing B2C lending platform that utilizes ML technology to recommend clothes that fit user personal styles

Facebook marketplace:
Marketplace allows Facebook users to post pictures of everything in their garage sale items and collectibles and browse items offered by nearby sellers as well.



Mid-century modern armchair in like new condition. Dark stained walnut wood with light blue wool upholstery. Local pickup only.

After conducting competitive analysis on several existing applications, we noticed key features such as geographic community based listings and peer-to-peer lending are covered by the competition to some degree. However, existing applications tend to be commercially focused on subscriptions (Stitch fix) or heavily geared towards high fashion (rent-the-runway) or exclusive high-end communities (Turlerie) . Additionally, marketplaces such as Facebook marketplace, normally do not have a designateded clothing section to easily browse, borrow or buy professional attire. Thus, our unique value proposition of the application is to incorporate community based listing and make peer-to-peer lending into an easily navigable browsing/posting clothing user experience flow that is designed specifically for those who lost their jobs or first/early career seekers during this pandemic.



Features	Stitch fix	Facebook marketplace	Turlerie	Attirely
Clothes Focused	✅	✘	✅	✅
Peer-to-peer	✘	✅	✅	✅
Open to All Community members	✘	✅	✘	✅
Free to use	✘	✅	✅	✅

API Selection and Usage

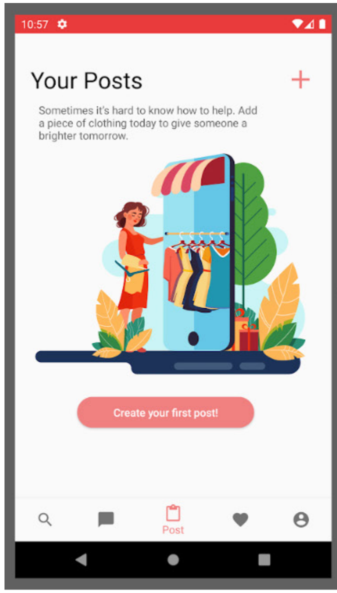
In our application, we used three different APIs: Google Vision API, Google Maps API, and Firebase. We used the Google Vision API to help detect the qualitative tags of each clothing that the user takes a picture of. Using these tags, we populate the selections automatically based on the tags received from the API and then add them to the description where the user can review them. The Google Maps API enables us to parse address data to coordinates and generate a Map view in our Posts view to pinpoint the locations where people are willing to borrow their clothes, allowing users to find clothes based on nearby posts. Lastly, in order to save all these Posts and keep track of the interactions between each User in terms of Posts and Chats, we use Google Firebase’s Realtime Database server to store the information in the Cloud to synchronize each user with every chat and post from one place.

Firebase

Cloud Vision API

Google Maps

Final design



Sometimes it's hard to know how to help. Add a piece of clothing today to give someone a brighter tomorrow.

Image 1: This view is shown if the user hasn't created a post before, inviting them to post their first item of clothing on Attirely.

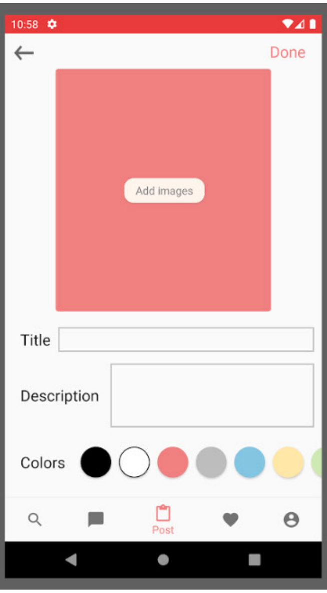


Image 2: The user is shown a list of options to select to describe their article of clothing, the first step is to add an image.

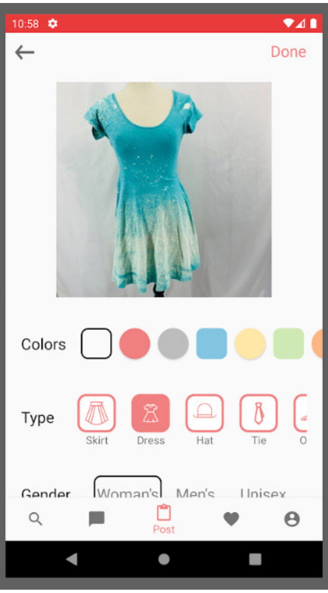
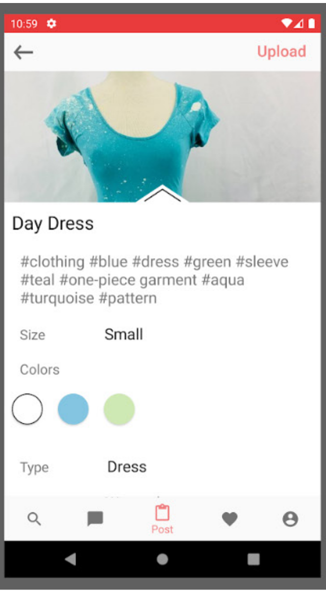


Image 3: Once the image is added, it is run through the Google Cloud Vision API to extract information which is then automatically filled in. The user can manually update these as well.



Day Dress

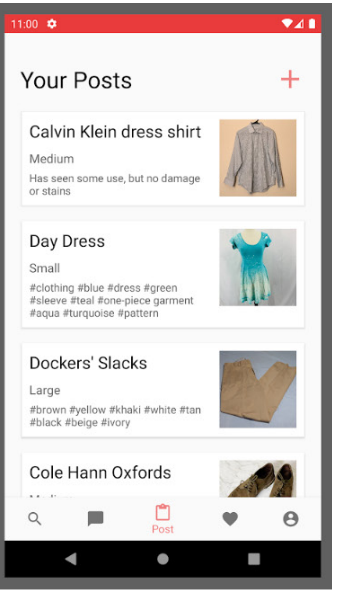
#clothing #blue #dress #green #sleeve #teal #one-piece garment #aqua #turquoise #pattern

Size Small

Colors

Type Dress

Image 4: The user is given a preview of what their post will look like when it's uploaded, and are prompted to upload their post.



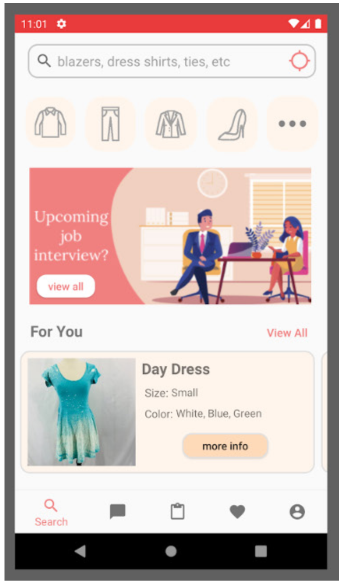
Calvin Klein dress shirt
Medium
Has seen some use, but no damage or stains

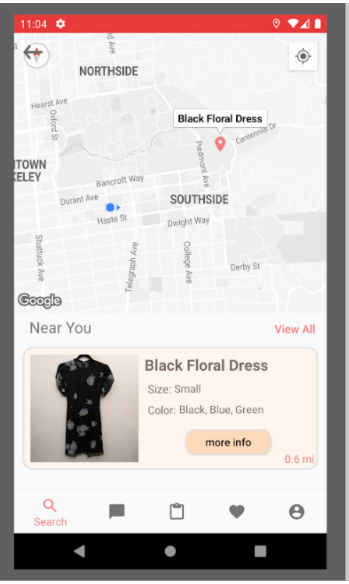
Day Dress
Small
#clothing #blue #dress #green #sleeve #teal #one-piece garment #aqua #turquoise #pattern

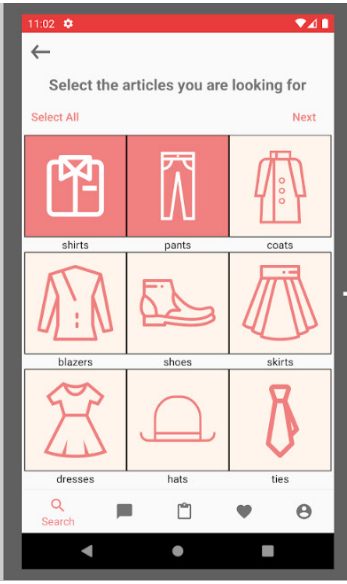
Dockers' Slacks
Large
#brown #yellow #khaki #white #tan #black #beige #ivory

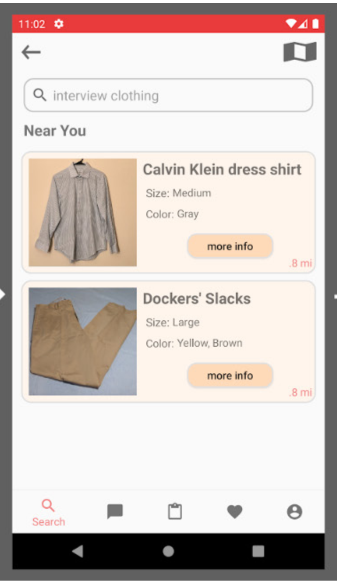
Cole Hann Oxfords

Image 5: Once the upload is done, the user is taken to a list of the posts they've made previously. From here they can make another new post.









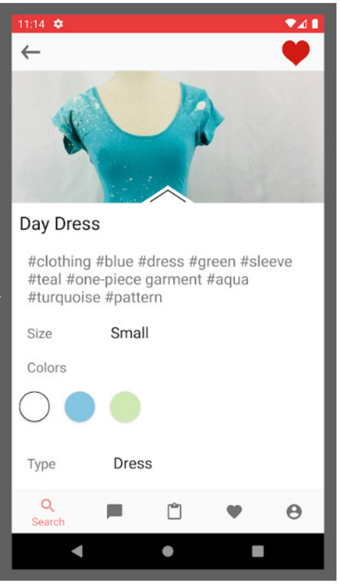
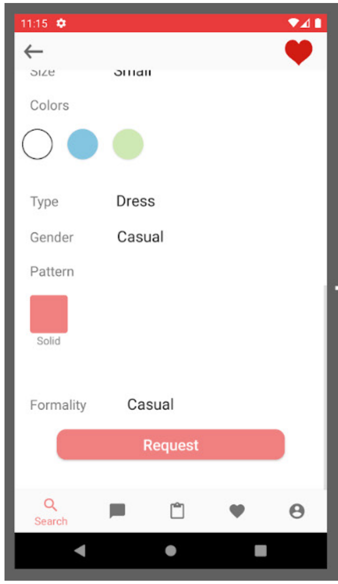

11:14
Day Dress
#clothing #blue #dress #green #sleeve #teal #one-piece garment #aqua #turquoise #pattern
Size
Small
Colors
Type
Dress
Search

Image 1: This is the home view of the app, the user can see a list of articles of clothing in the For You section. They also have the option to search, or to filter by one of the types of clothing.

Image 2: This screen can be reached from either the home page, or by clicking the map icon in the top right corner of any list view of items. It shows items near the user's current location as well as a horizontal list of them.

Image 3, 4: If the user clicks on the filters for the type of clothing, they are taken to the screen to select which ones they want to see. Here, the user wants to only see shirts and pants. Once they click next, they'll be taken to a list of items that match their filter criteria.

Image 5: From any of the other views, this is where the user is taken if they click "More Info" on an item of clothing. This allows the user to see information about the clothing.



Size Small

Colors

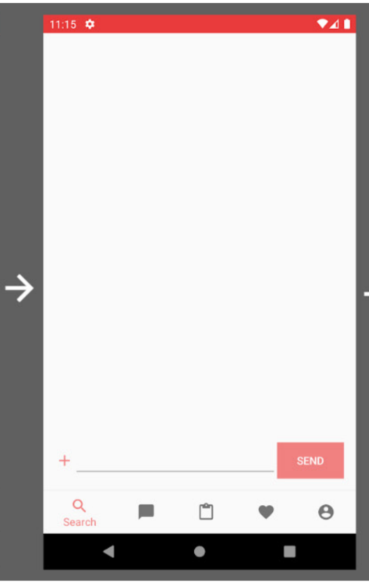
Type Dress

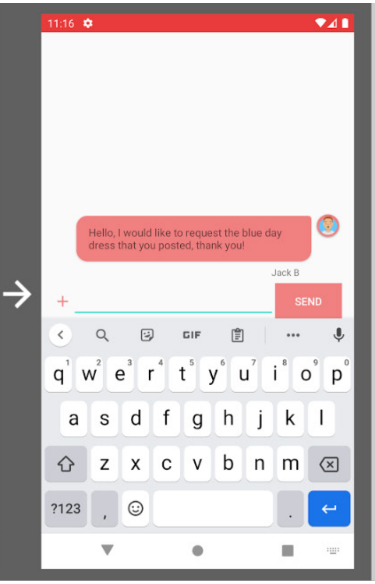
Gender Casual

Pattern

Solid

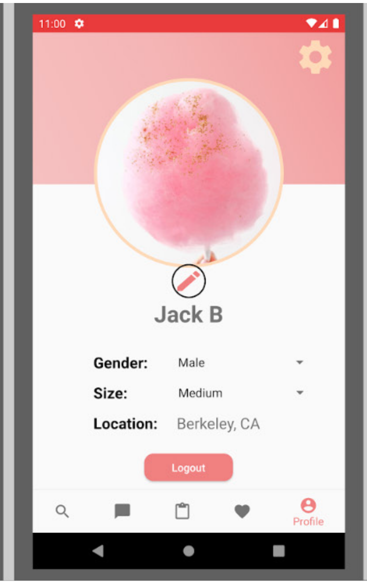
Formality Casual





Hello, I would like to request the blue day dress that you posted, thank you!

Jack B

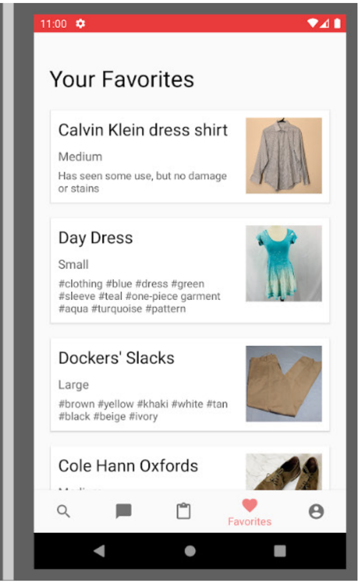


Jack B

Gender: Male

Size: Medium

Location: Berkeley, CA



Your Favorites

Calvin Klein dress shirt
Medium
Has seen some use, but no damage or stains

Day Dress
Small
#clothing #blue #dress #green #sleeve #teal #one-piece garment #aqua #turquoise #pattern

Dockers' Slacks
Large
#brown #yellow #khaki #white #tan #black #beige #ivory

Cole Hann Oxfords

Image 1: This is the “More Info” view of an article of clothing. At the bottom, there is a “Request” button which allows the user to talk to the owner directly.

Image 2: Upon clicking the “Request” button, the user is taken to a chat window where they can send messages or images. The user can also click on the inbox button on the navigation bar to see a list of their conversations later.

Image 3: The user can send text or image messages to the owner of the clothing to organize a pickup of the item.

Image 4: This is the profile view, which shows a default image, and the name of the user as well as giving them the option to select some default preferences about themselves. (This page is not integrated into the rest of the app, so although some of the elements are interactable, they will not affect the functionality).

Image 5: This is the favorites view, where users can see the items they’ve favorited before. (This is not fully implemented, and currently just shows a list of all items on the platform).

Technical Challenges

Due to the peer-to-peer aspect of our app we had two main sets of users, those who would be requesting clothing from the app, and those who would be donating it. We had to ensure that we supported a set of tasks for each of those users. The integration of real dynamic data into our app screens was our largest technical hurdle to overcome. And while there are definite improvements to be made with more time, we were proud of the amount of real functionality we managed to implement.

Integrating Firestore

The largest challenge in finalizing our app implementation was using the firebase database to store the posts that users make, as well as the messages for the chat system. Although our team had some experience with using Firebase in the past, we did not have it implemented for Design 9, so part of our app structure was created before the database was ready to use. Once we had the Firebase set up and were able to start putting real data into it, we had a back and forth process of editing the database structure, then testing our data format.

Eventually we managed to figure out a reasonably standard way to store the information for both the posts and the messages.

One improvement we would want to make is to find a way to efficiently store the images that go along with posts. As it stands, loading posts from the database requires pulling down the images as well, which leads to rather long loading times with a slow connection. This could likely be solved with an image processing layer to reduce the size of images before uploading them, or some form of lazy loading of assets.

Two User Groups

We had two many types of users who may use our app—donors and receivers—and both have slightly different needs and tasks to perform. The task we completed first was the process of posting a piece of clothing on the platform. This used our main API, Google Cloud Vision, which we used for automatic detection of features in the images users take of their items. This process was not perfect and our implementation could have been improved with more time to customize the results for clothing. This was the main task for the donor user, along with a simple view of the posts they've made.

Users requesting clothing had a larger range of functionality implemented. Beyond the home page with a list of posts, the user can use a search functionality to restrict the viewable clothing by category. In addition, they can view search results in a helpful map view. This required us to add support for storing the user's location and getting their current location.

We also included a favorites feature in our prototypes, as well as a profile screen for the user to set some default preferences. Due to the many views we had planned for the receiving user, we chose not to fully implement all of them. The favorites view has a list of posts, but it just grabs a list of all the posts, users can't actually select which posts are shown in that view. In addition, the profile page is mostly visual, as the user's selections are not currently used in the rest of the app.

Supporting a Range of Devices

As with any mobile application, creating views that dynamically adjust for a range of phone screen sizes is a challenge. Although many of the views can support some variation in the size of the phone used, there are many edge cases that we simply could not test for. We optimized the views for the Pixel and Pixel 2 phone, using the standard resolution that the simulator uses.

Notes on Running the App

The app will require permissions to access your current location and camera and photos in order for all of the functionality to work. In addition, there is a login process which must be completed in order to support having userIDs linked to the posts and chat. The email is not validated so a fake one can be used but the posts and messages will be linked to that account so remember the password!

On some of the views which load posts from the database, there may be a pause before anything loads, which can be rather long if your connection is slow or not stable. Even on a good connection, there is a delay before posts load on the My Posts and Home pages.

Summary

Attirely is a peer-to-peer donation platform providing equitable access to professional attire. As students who are about to join—or in the midst of joining—the workforce, the issue of equity in the hiring process was one that struck a chord with all of us and we felt was a valuable contribution to make. The development of Attirely was informed by the people who would use it, both through peer feedback and user interviews. We believe this process has made Attirely a platform which provides more value to its target user base than any other currently existing application.

Although there are options like UC Berkeley's Success Closet—part of ESS which allows students to borrow professional clothing—there are no large scale applications which fulfill the role of providing access to free or even reduced price clothing specifically to aspiring professionals. Other platforms which have free clothing—like craigslist or Facebook marketplace—include other items for sale or donation along with clothes. And platforms which are targeted at clothes are mostly aimed at higher end items or designer brands. Attirely fills a niche which we believe nothing else does.

One of the key features of Attirely is the use of the Google Cloud Vision API to encourage donations by making it quick and painless to post items. We could not find another use of this feature in a similar marketplace or donation platform. Beyond making it easier for people looking to donate clothes, this feature would also improve the experience of users looking to receive clothing from Attirely. With an easy donation process, more items will be given away, allowing everyone to find the item they need to walk into their next interview with confidence.

Attirely

Put your wordrobe to work!