SmartClothing

We help you buy clothes in a smart way

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1. Problems & Solution Overview:

Problems:

People want a way quick way to buy clothes with similar styles to their fashion collections already collected on Pinterest/Instagram. They also want to maximize their investment by buying "value" clothes that they wear frequently. Additionally, in some cases they also want a way to recycle these clothes in exchange for money or other benefits.

Solution:

Our proposed solution has two levels:

- The basic level of the application pairs with the user's Pinterest/Instagram so that users can import their fashion ideas in the app. And then the system would suggest clothes with similar styles and also provide option to do in-app purchasing.
- There is also a deeper level for users who want "value" clothes. These users track some of their existing clothes periodically and then future suggestions are made based on this wearing frequency.

We may include some notifications to provide recycling information for clothes that have a very low "value"

2. Contextual Inquiry Target, Stakeholders & Participants:

Overview:

In the beginning, we conducted **5 Contextual inquiries & 5 Interviews** with 5 participants at their homes. They are students or young professionals who we can easily reach and have needs of buying fashion products. In each session, we observed how they collect fashion ideas; how they sort their clothes; how they pick clothes and what kind of clothes they have. Then, we interviewed them with questions regarding their purchasing and sorting habits in regards to clothes. We found some interesting common themes.

Participant background & key findings:

Stephanie, 20, Female, a junior college student. When shopping online, she cares about style, size and material. Her motivation is due to weather change. She collects fashion ideas from Instagram. She would consider spending more on

sustainable clothes after working. Currently she doesn't know if buying sustainable clothes can really help the human. She knows every clothes she bought very well.

Jessica, 22, Female, a senior college student. She knows exactly what she'd buy when shopping. She gets fashion ideas from Instagram. She doesn't care about others' opinions. She cares about style (first), color and price. Sustainability was never her concern. She records her expenses for everything each month. She has a fickle dressing style, which leads to many used, unwanted clothes. She discarded these clothes when she moved to a new place. She fails to do recycle due to laziness. She doesn't have trouble matching clothes normally.

Daniel, 22, Male, a senior college student: He tends to care a lot about fashion but does not shop for clothes regularly (about thrice a year). His wardrobe is function-oriented and in general he aims to get clothes that fit him perfectly. If he buys them online, he'll keep searching until he gets what he want and if he is buying them in-store, then he keeps trying different fits. He is definitely interested in sustainable solutions.

Wei, 32, Male, worked in IT for 5 years. He usually has a clear goal in mind before going shopping, such as pants with a certain color. His clothes are function-oriented (for work, for sport, for casual events...). He went shopping in physical stores around 5-6 times per year. Never bought clothes online. His major concerns when buying clothes are style, price/promotion and comfort. He didn't really think about sustainability and ethical issues unless he was told.

May, 27, Female, worked in IT for 3 years. She only bought clothes when she needs something, like 5, 6 times a year. She values clothes of good quality that can last 1-2 years. She collected fashion idea in Pinterest. She donated all her well-worn clothes to second hand shop, such as Goodwill, for tax deduction. She cared about sustainability when buying clothes, but she felt that the information is not always available.

3. Contextual Inquiry Themes & Results:

Common themes:

Sustainability

- Almost all our participants didn't mention sustainability and ethical issues until we brought it up.
- Although most of our participants didn't actively search for sustainable products, they do understand the importance of sustainability when the issue was addressed.

- Comparing with students, professionals like May are more likely to make sustainable/ethical actions than students, because they can afford clothes of higher price.

Fashion considerations

- In general, style is the primary concern when buying clothes.

Shopping methods

- There was no clear trend regarding online or in-store shopping. Most of our participants have tried both and have different preferences due to circumstances.

Tracking

- Most of participants did not know how much they spend on clothes each month.
- Participants have a rough idea about how many clothes they have, but are not always sure about the exact number.
- Participants have a rough idea about how often they wear a certain clothes, but not sure about all of them.
- Some participants use online tools, such as Pinterest or Instagram, to help them collect fashion ideas.

Recycling

- Currently, it requires too much effort to do clothes recycling (e.g. don't know where to recycle or live too far away from second hand stores), so most of our participants either leave their unwanted/used clothes behind in the closet for a long time, or simply throw them away.

Results:

In short, we learned that people usually consider sustainability an afterthought in terms of fashion shopping. However, they still care about it. Except one participant who explicitly expressed her indifference to the issue, all other participants showed their concerns when the topic was brought up.

In addition, the common themes suggest four possible directions in terms of tracking in the fashion purchasing process **1. budget/expense**; **2. items bought**; **3. wearing frequency**; and **4. fashion ideas**. We will have a general theme of "**learning over time**" to guide the four sub-themes. We want to help users to be a smart shopper by learning the information from the four sub-themes.

Any of these areas are interesting to design for but we think an important area would be in the intersection of one of these with sustainability. Almost all of our interviewees cared about it and if we are able to come up with a system that

integrates these two, many users would be happy. An example is linking the collection of fashion ideas with sustainability. We haven't thought about solutions in this space yet but these are important areas.

4. Survey Results:

Based on the results of contextual inquiry, we made one survey on how people deal with their unwanted clothes. The result shows that 74% of participants have unwanted clothes, whereas only 21% of them recycle unwanted clothes to local recycle places. Most participants would be comfortable with recycling their clothes if there is a easier way to do so. Moreover, the survey results show that most people have unwanted clothes due to their style preference change.

5. Task Analysis:

Who is going to use the design?

Our target audience is females who are interested in fashion idea collection and who wants to buy clothes that worths every penny.

What tasks do they now perform?

Users go through fashion magazines/Pinterest/Instagram to collect fashion ideas. Then they search and buy clothes with similar styles online and in-store; generally without having easy options to take sustainability and the subjective "value" into account (In our design, the clothes value will be based on the particular clothes's wearing frequency, price and material). As a result, they might buy clothes with low value that tend to stack over time, wasting money and producing wastes.

What tasks are desired?

Seamlessly integrate with fashion collection tools and provide a convenient way for the users to shop for clothes with similar styles that also take sustainability and "value" into account. In addition, quick recycling tips may be provided to assist users get rid of the unwanted clothes.

How are the tasks learned?

The design will be intuitive so that users just pair their social accounts, import fashion ideas and they then instantly get suggestions for both normal and sustainable options. They can instantly start shopping from within the application. Once they get used to this, we ask them to start tracking some of their clothes to

make suggestions of high "value". So users don'ts need to learn much for getting sustainable & high value options.

Where are the tasks performed?

Primarily, when the user wants to buy clothes. But also periodically to track clothes and anytime when they want to dispose their unwanted clothes.

What is the relationship between the person and data?

There are three possibilities as below:

- Items bought: The person's purchased items are tracked. The data can then be used to show trends towards being sustainable. Correlation of this data can advise future purchases for the person.
- Wearing frequency: The person's wearing frequency of certain clothes is tracked. The data can be used to determine the "value" of the clothes in comparison with the price and the sustainable rating (e.g. Free2Work)
- Fashion ideas: The person's fashion taste is tracked. This part can possibly be linked with the existing data, such as Pinterest or Instagram. The data can be used as the foundation for sustainable product suggestions.

What other tools does the person have?

For making "conscious" decisions: GoodGuide, Free2Work or OpenLabel
For clothes recycling: Second hand stores, charities, brands that offer recycle deals.

How do people communicate with each other?

In general, this is a single user application so they don't need to interact with each other, however, there might be some social factors we could consider. For example, to rank users based on how "conscious" they are. The one ranking on the top will be awarded as "conscious buyers", and then other users get the chance to take a look at their clothes collection to see how they shop in a "conscious" way.

How often are the tasks performed?

The tasks are performed depends on users' habits in their fashion purchasing process.

What are the time constraints on the tasks?

Customers can potentially use this throughout their fashion purchasing process. So there is no real time constraint.

What happens when things go wrong?

People continue shopping/recycling in the same way as they did before.

6. Task Analysis:

Idea 1: Green fashion plug-in

The first design is a plugin that helps users do conscious online shopping about sustainability. The system will record all of the details about the fashion items in users' online shopping history; it will save users' interested fashion related pictures as well; it also collects and analyzes the data related to sustainability for every single fashion item online. The system will use these data to help users making better shopping decisions when needed. All of the functionality of the product is within the browser, so there is no external application that performs any fundamental tasks.

- Task 6: If user is browsing certain style of cloth that is not sustainable, the system gives other more sustainable options but in similar styles (Figure 1).
- Task 4: The system rates items online based on their sustainability and gives a relative score. Users can see the sustainable score on the side of each item when shops online. The score provides a general information about the fashion items while more information is shown if clicked the button (Figure 2).
- Task 1: Users save any picture that has the fashion items that they are interested in to "style book". Users can browse through "style book" later and the system will find similar items based on the pictures when needed (Figure 3).
- Task 2: The system will automatically record all the clothes(and related data) that user have bought online. If user want to check whether the item will fit him/her, the "compare" function will show user the detail size comparison between the item and the boughten cloth in database that is most similar in size (Figure 4).

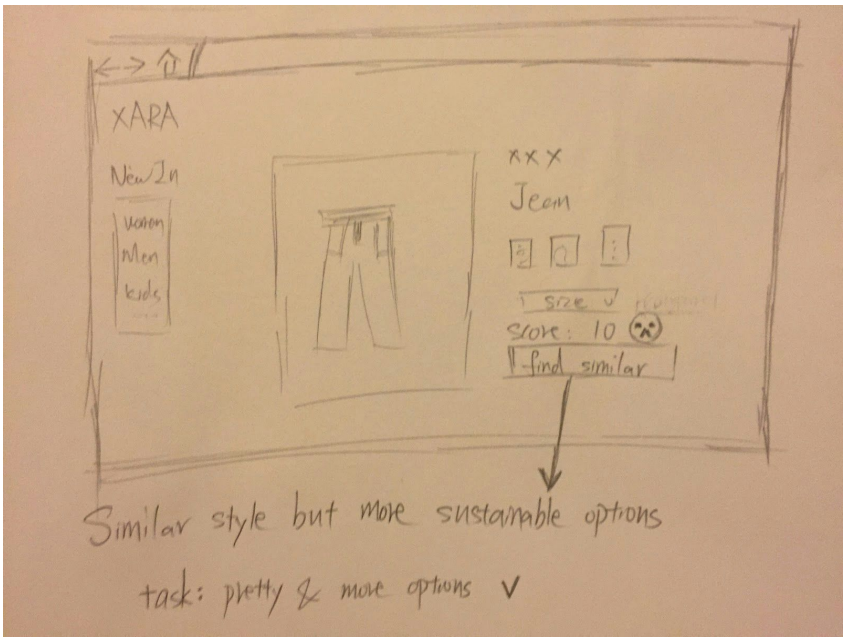


Figure 1. Design "Green Fashion Plug-in" Part One

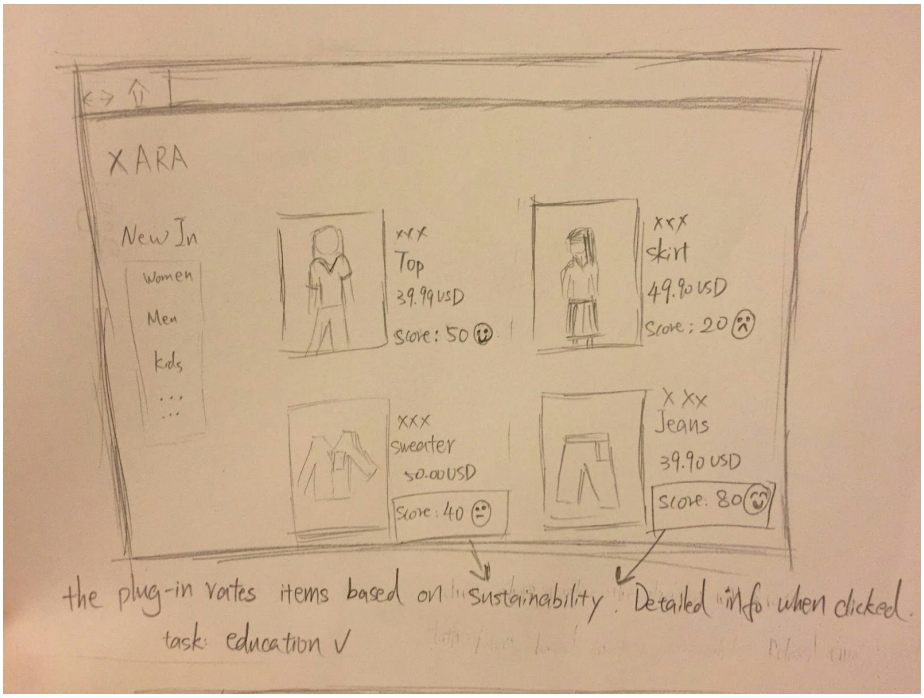


Figure 2. Design "Green Fashion Plug-in" Part Two

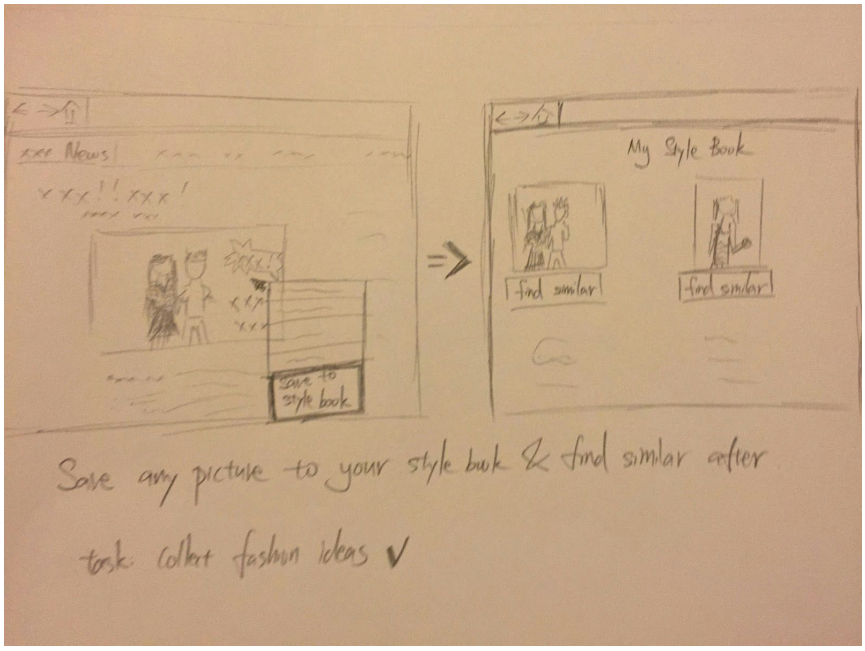


Figure 3. Design "Green Fashion Plug-in" Part Three

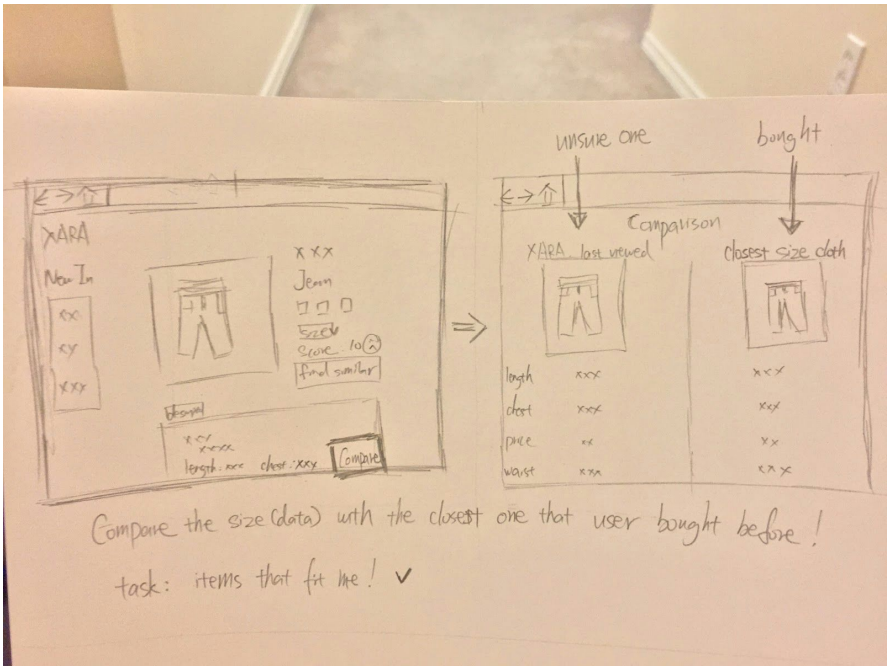


Figure 4. Design "Green Fashion Plug-in" Part Four

Idea 2: Smart fashion guide app

This app intends to function as a tool to help people determine the "value" of their clothes and guide them to spend their money wisely on fashion products. The target users are people who are interested in the sustainable lifestyle.

The key interaction flow: （Figure 5):

- Task 1: User add images of clothes style they like to the "My style" part of the app (or import from their Instagram/Pinterest)
- Task 6: The system auto-suggest clothes of similar styles from other brands (image recognition). The result is presented in the order of "conscious level" (e.g. score from free2work). User can see how green the options are.
- After users buy the clothes, they can scan the barcode and the product will appear in "My closet".
- Task 4: After users buy and wear the clothes for a certain period of time, they can manually input the wearing frequency of the particular clothes. For example, "3" times/week. (They don't have to input it every time they wear)
- Task 5: The system will calculate the subjective "value" of the clothes for users (The value = wearing frequency/price) and provide the graph of the correlation between the clothes' conscious level and its subjective value. The result will be shown in the "My report" part.

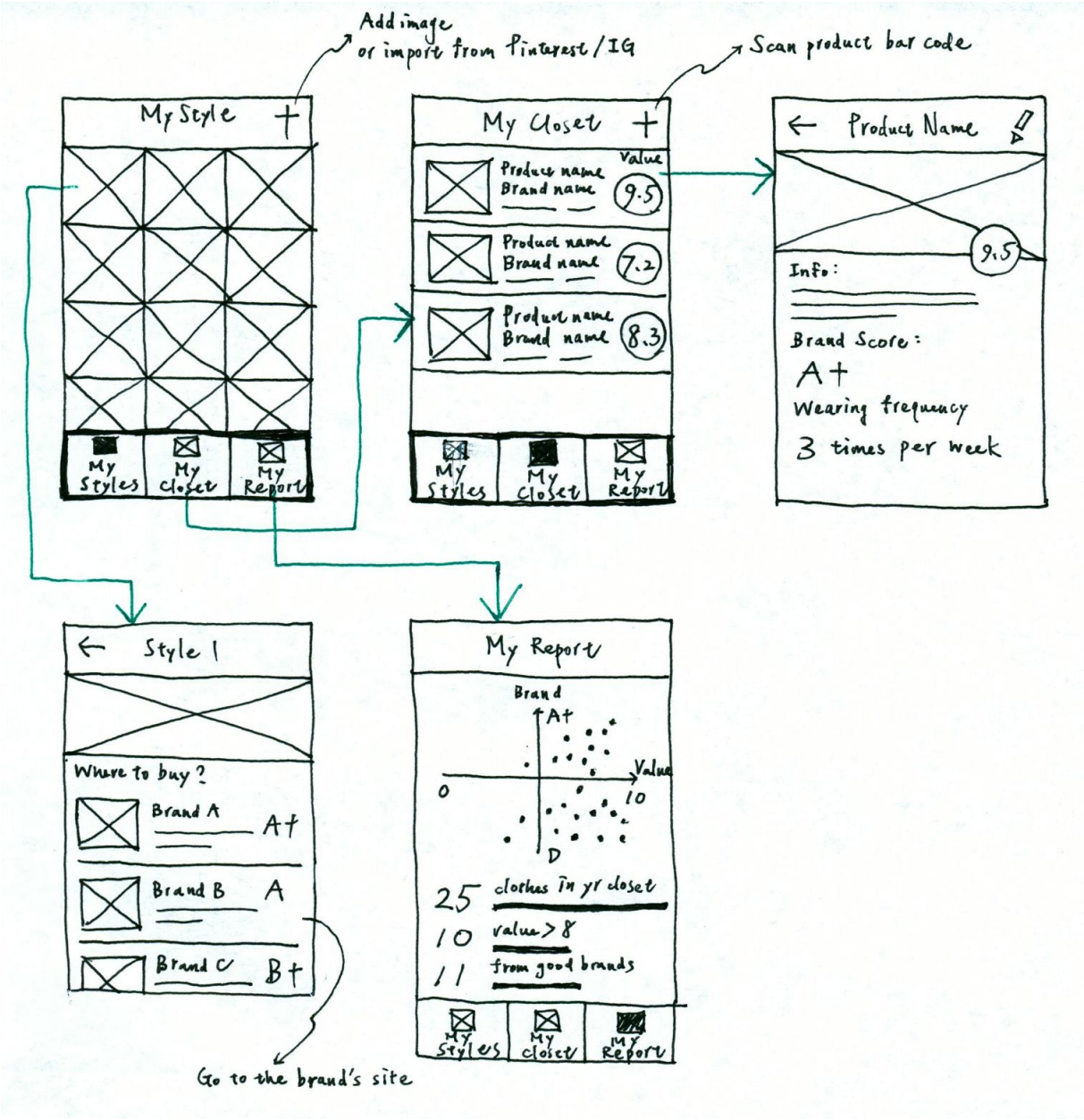


Figure 5. Design "Smart Fashion Guide App"

Idea 3: Sustainable fashion assistant

The third design is a mobile app that helps users do online shopping smartly by tracking their personal traits and wearing behaviors, reducing outfits waste, and encouraging users to resell or recycle unwanted outfits. The goal is to save both users' money and world's clothing resources. Our audience is people who want to save money on outfits, have many unwanted clothes, or change dress styles constantly.

The key interaction flow:

- Task 1: Fashion Idea Collection: The app can track users' fashion preferences and dress style changes by connecting to their Pinterest or Instagram accounts, or allowing them to pick fashion styles from a list of fashion pictures (Figure 6).
- Task 2: Find Clothes That Fit Me Perfectly: Allow users to input their personal information and preference when first login. Then, it will recommend outfits based on the information. (Figure 7).
- Task 4: Reduce The Purchase Of Low-valued Clothes: The app constantly tracks the wearing frequency of each purchased clothes. Clothes with low wearing frequency and high price is considered to be low-valued. (Figure 8.1 & 8.2).
- Task 3: Conveniently recycle unwanted clothes: The app provides options for users to recycle unwanted or "low-valued" clothes. (Figure 9).

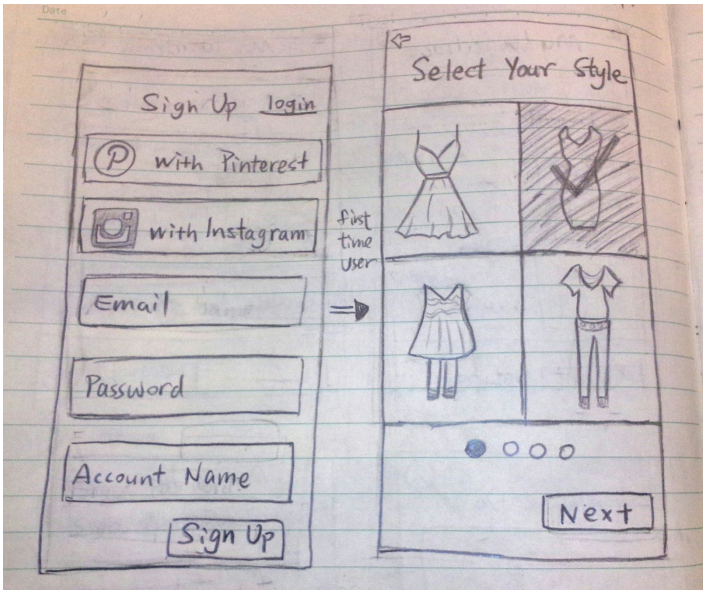


Figure 6. Design "Sustainable fashion assistant" Part One

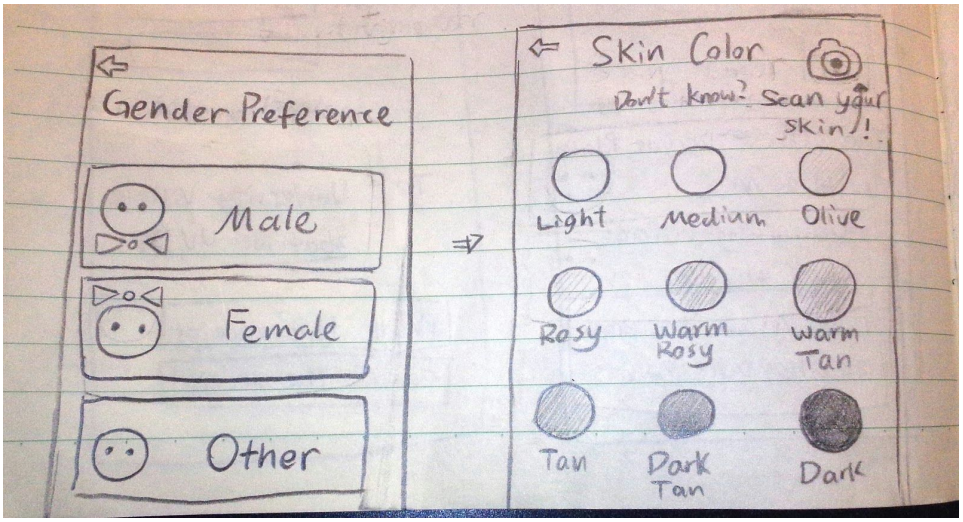


Figure 7. Design "Sustainable fashion assistant" Part Two

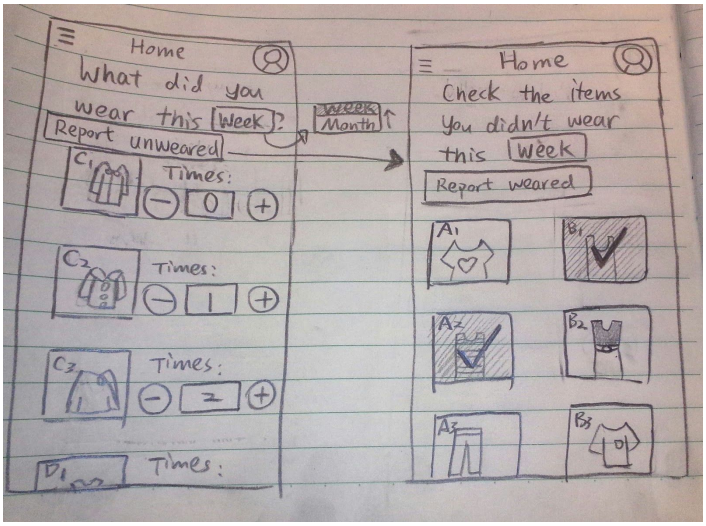


Figure 8.1. Design "Sustainable fashion assistant" Part Three

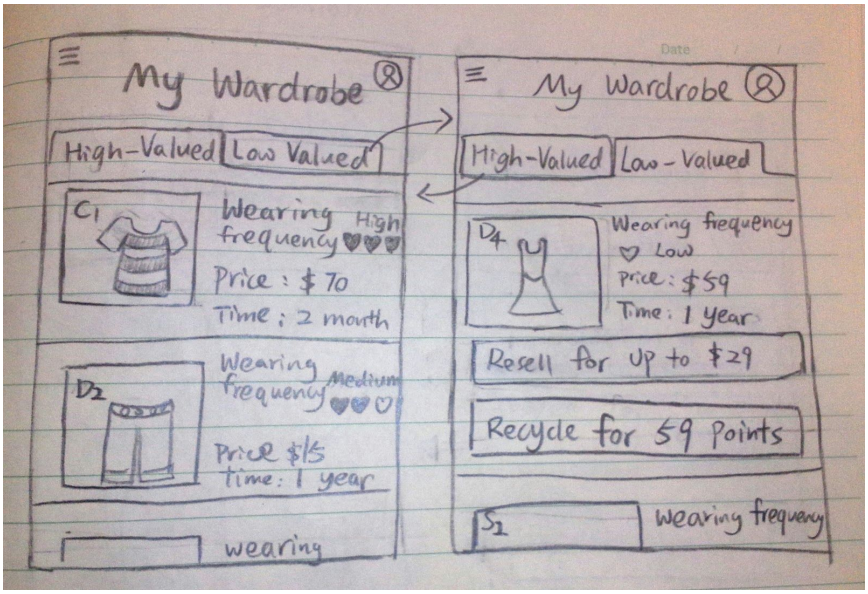


Figure 8.2. Design "Sustainable fashion assistant" Part Three

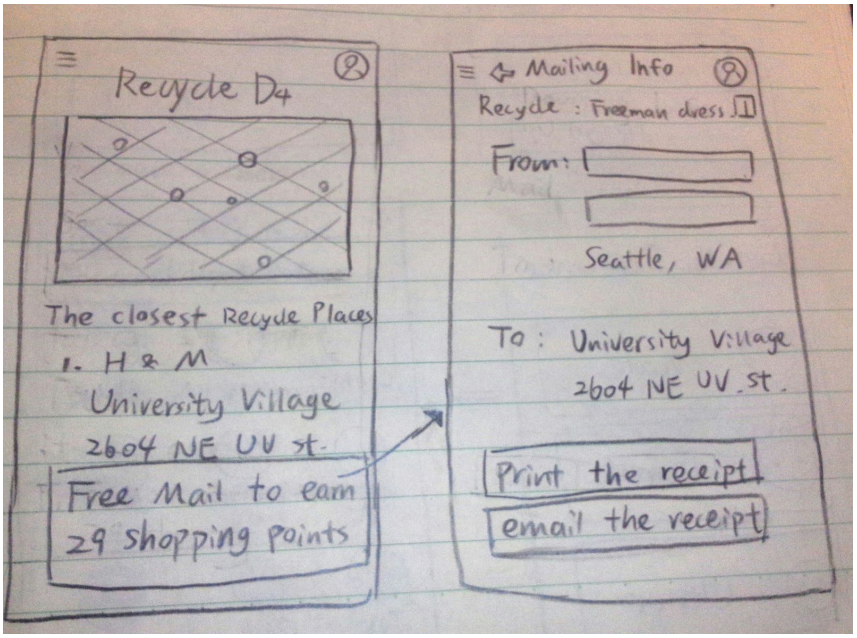


Figure 9. Design "Sustainable fashion assistant" Part Four

Choice of design and tasks to further pursue

After discussions with out TA's and peers, we decided to go with the core of the second design idea: Smart fashion guide app. We decided to integrate that along with some ideas from design idea 3. This decision was taken because it best aligned with the tasks that we chose to further pursue. These tasks were:

1) Fashion Idea Collection and suggested shopping (including sustainable options)
2) Reduce the purchase of low-valued clothes

We found that the web plugin was appealing but at best it facilitated a one-time use case rather than something that users would come back to. Additionally, since people really wanted fashion collection and rapid suggestions over sustainability, we made that our main goal and just included sustainable options. We also focused on the money aspect since people cared most about the **price**. To do this we intend to do the following:

- ➢ Help users identify the value of their clothes (We will calculate the value based on the wearing frequency, price, seasonality, wearing time, current quality and wearing situations).
- ➢ Provide users recycling information. E.g. nearest recycling location, brands' recycling plans comparison.

We believe that this idea has large potential because saving money is such an universal need. By using our app, users can save money while unconsciously adopting a more sustainable lifestyle.

7. Written Scenarios:

The primary aim of our design is to suggest fashionable ideas while reducing wastage (by using the wearing frequencies). We also have a stretch goal to assist the recycling of clothes. Our goal can be observed in the two scenarios below:

Scenario 1: Buying new clothes (Storyboard 1)

(Suggestion based on Pintrest/Instagram paired with clothes value from Scenario 2) It is Winter Quarter and Jennifer wants to buy new clothes. Jennifer browses clothes online and adds them to her Pinterest in the process. Now, she uses our application to actually look for suggested clothes. For this, she links her Pinterest/Instagram to our application. Once this is done, suggested clothes (normal + sustainable) appear in the application. She can now buy these clothes directly from here. If Jennifer has been using our application for tracking as well, these suggestions are also ranked in the order of value (frequency of clothing).

Scenario 2: Value of clothes (Storyboard 2)

Jennifer can buy clothes (normal + sustainable) based on suggestions from her Pinterest directly from within the application. However, if she wants an optimized

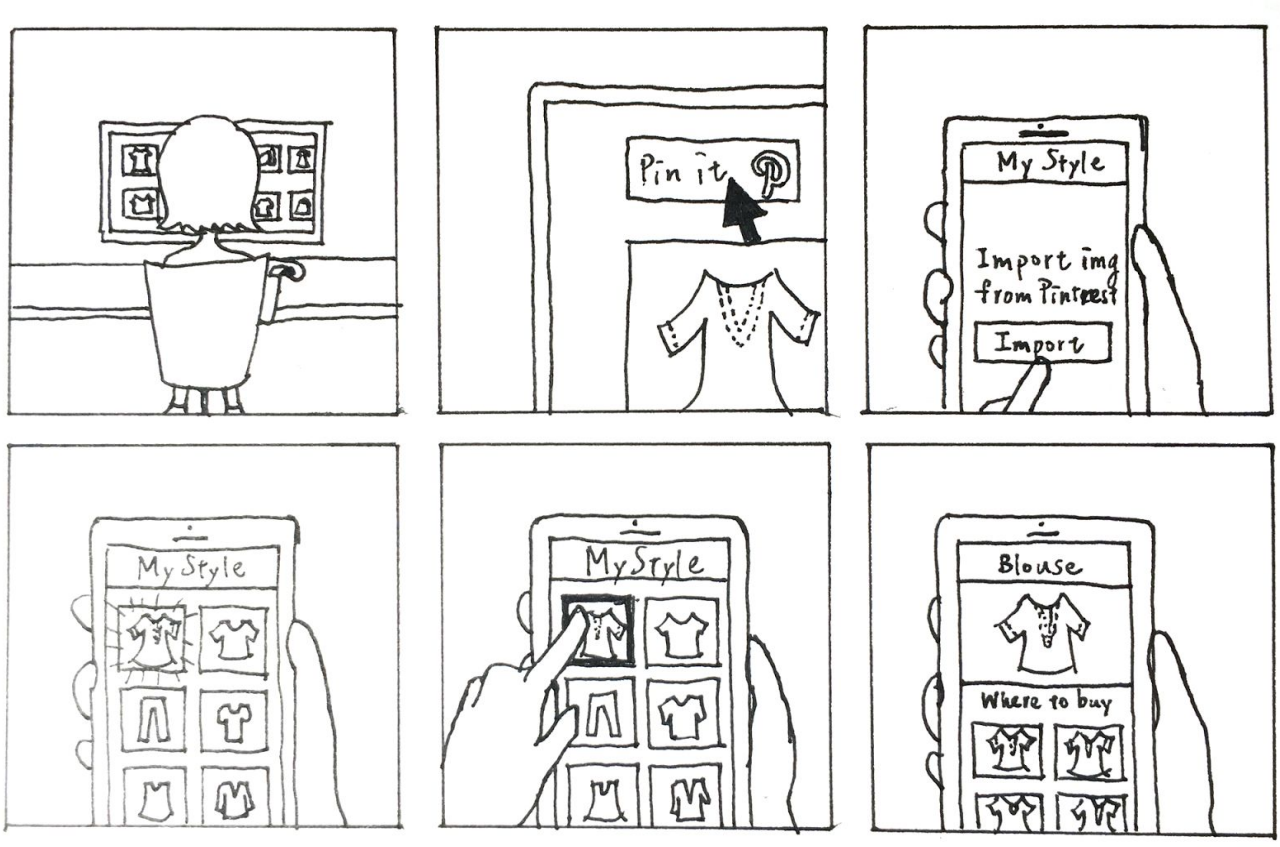
experience, she can now start tracking her clothes within the application. Once every week, Jennifer goes to the application and scans the tags of her most used clothes. She can enter the approximate number of times she wore that outfit and from then on, future shopping suggestions will be made based on this value.

8. Storyboards:

Storyboard 1:

Task: Fashion idea collection

1. The girl is browsing clothes online.
2. She adds the picture in Pinterest.
3. She imports her Pinterest fashion board in the app.
4. The images appear in "My style" part in the app.
5. She clicks on one of the clothes.
6. The system automatically suggests clothes with similar styles for her.



Storyboard 2:

Task: Reduce the purchase of low-valued clothes

1. The girl stands next to her closet. (Message bubble: Are these clothes worth the investment?)
2. She scans a barcode of a clothes.
3. The clothes appears in the "My wardrobe" page in the app.
4. She clicks on one clothes and inputs the wearing frequency.
5. After that the system calculates the value of the clothes for her.
6. She realizes that the value of the clothes comparing to other clothes in the closet is low.