Design Manifesto

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Introduction

As a undergrade student majored in Computer Science, most of the time in college is to learn very fundamental computer science knowledge. For example, how to write code in different coding languages, like Java, Python, C, etc.; how computer store data; how operating system manages computer resources and provides services. After taking a semester of Human Computer Interaction course in Mount Holyoke College, I was introduced to a completely new field. I knew what human-centered design is, what should consider before they start, and how to create a human-centered design, etc. All the things that I learned from this course guide me to be a better developer in the future.

Nowadays, we use technologies everywhere. All technologies have different purposes, and their audience are different as well. Designs they do have many functionalities, and all functionalities are helpful and efficient when people know how to user them. However, not every design is user-friendly. Some designs require people to put on extra efforts to learn and understand how to use them, and there are some functionalities which are hided somewhere, so that people cannot know where to start intuitively. Considering these reasons, before starting on a project, a good human-centered design always requires evaluations and revisions.

The biggest differences human-centered and technology-centered design is whether designers put human first or novel technology first. Since this is a HCI course, all of our projects involve applying what we learn in class into real designs. Along the designing process, there more or less include interaction, communication, engagement with people by doing observation, survey, interview and evaluation. I will talk through some important things I learn from my experience of engaging in design process throughout this semester.

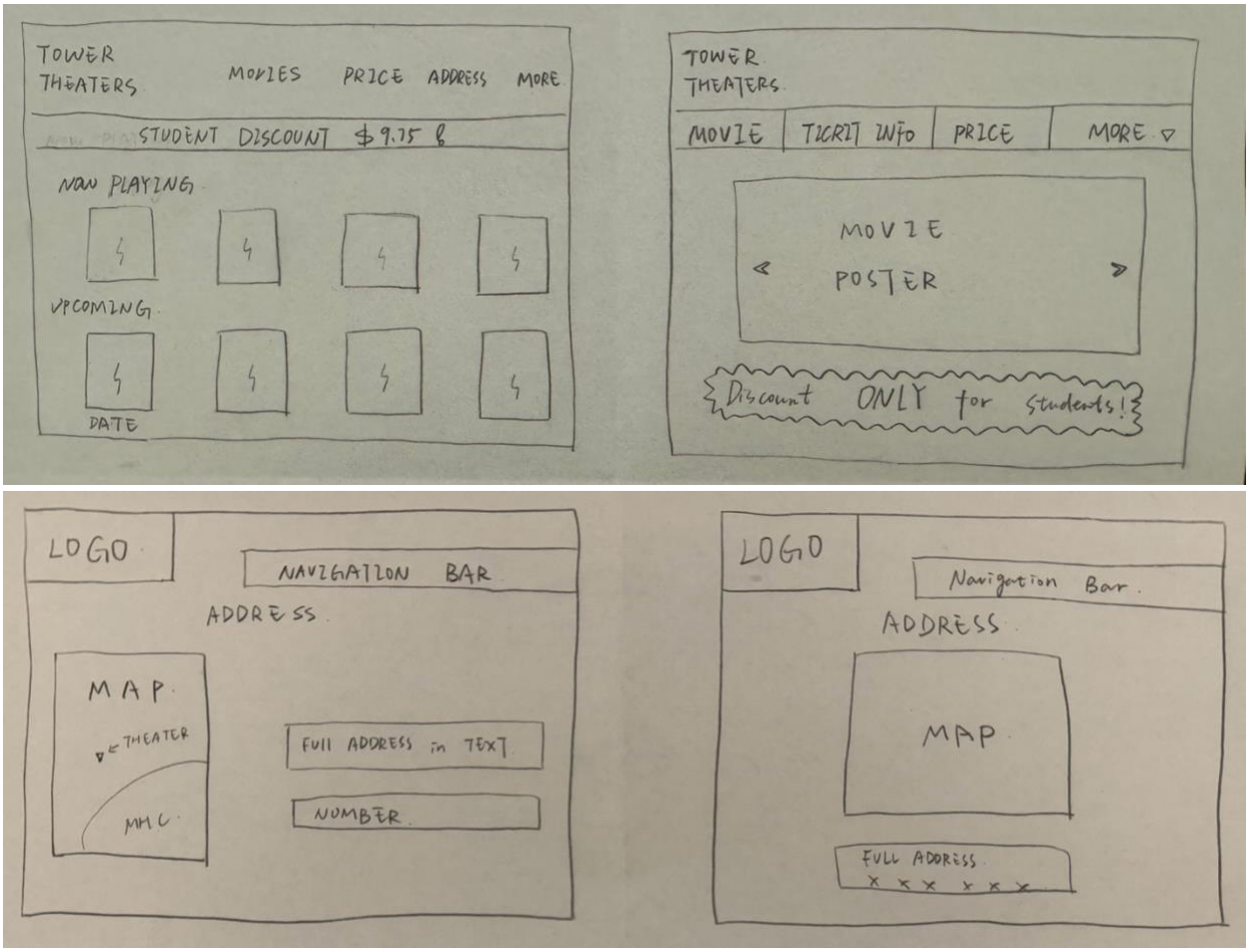
Brainstorming Ideas

After knowing the purpose and expected outcome of each project, I started to brainstorm about what approaches I can do to achieve the goal. My purpose for this step is to gain more ideas and try to be more creative rather than finalizing my design ideas.

In the beginning what I did was I tried to come up with multiple ideas in my mind without writing down because I always tried to think of an idea which can perfectly fit with achieving the goal. However, I realized that if I just think, I cannot compare different ideas, so I cannot tell what strengths and weaknesses are in each design idea. And sometimes I only focused on how I can arrange positions of different components in the design to create a pretty layout, but I forgot the most important requirement for the project is human-centered design. I didn’t consider whether my thoughts are user-friendly.

After that, I started by writing my ideas down or drawing some sketches out. Instead of having a clear listed idea, sometimes my notes just like random thoughts because basically I just write down what might be helpful. Even though some sketches were completely different from my final designs, by listing these first thoughts out help me to reconsider and figure out what functionalities that I want my audience to know how to use intuitively, and what should I pay more attention on and emphasize within the context in order to provide a better user experience.

(Below are my sketches from Project 2)



Identify the Right Problem

In the following projects we did, sometimes we were only given vague tasks. There were not strict requirements, so we had more flexibility in designing. But it was even harder as well because we need to figure out what problems are, and then consider what we can do to solve the problems.

I remembered in our third project, since our design should help MHC students build friendship with one another. Grace and me first designed a survey because we wanted to find out why MHC

students think there are barriers in making new friends and in which ways they think is the best way to build connection. We created some survey questions which asking them about the frequency that they make friends, approaches that they make friends, characteristics that they think are important in deciding whether they can be friends with someone, etc.

By reviewing survey results, we found out a few things: people would like to make friends in person; some people don't desire to make friends with a group of people, and they are happy to spend time with current friends, but sometimes they need people accompany to do some activities. Then realized that our design doesn't necessarily need to help people to make new friends, but it can be a platform for people to connect with somebody that they don't know before, and whether they can be real friends or not it depends on how they feel after they meet each other. Therefore, our design not only allow people to make friends by recommending people who are willing to make new friends based on their preferences in friends, but also be able to post some activity invitations, so people can attend the same activities and know many other people in the events.

(Below are the survey me and Grace used, an answer from one interviewee and our conclusion.)

Part 1 Finding the right problem

The interview is semi-structured. Our target audience is current MHC students. We ask random follow-up questions to understand the interviewee's views better and get more detailed information.

Here are some potential questions we would like to ask in each interview:

1. Collecting Demographics
    a. Name
    b. Class year
    c. Major
2. What are the characteristics of your current friends or people that you know?
    a. Shared hobbies? Shared major? Shared background? Random people?
3. How often do you make new friends?
4. How do you make friends on campus? What's your experience of making friends on campus?
5. Do you want to establish connections with new people?
    a. YES: Do you find it easy to do so?
        i. What are some of the features/ways that work well?
        ii. Are there any inconveniences or barriers?
        iii. What type of people do you want to meet? What kind of features/characteristics do you want them to have?
    b. NO
        i. What's the reason for that?
6. What's your ideal way of making friends? In-person? Online? Randomly exploring? Using data to pair up?
7. What do you think can be created or improved for people to make connections or build friendships on campus if they want to do so?
8. If there is a platform or an app to help you make friends, would you like to use it?

Interviewee 5

Basic information: YY, class of 2024, Environmental studies

1) What are the characteristics of your current friends or people that you know?
   Similar personalities, the same courses, the same clubs, etc.
2) How often do you make new friends?
   3-4 months
3) How do you make friends on campus? What's your experience of making friends on campus?
   Most of her friends are students who take the same course with her (maybe doing group projects together), or club events.
4) Do you want to establish connections with new people?
   a) YES:
      i) What are some of the features/ways that work well?
         Similar interests
      ii) Are there any inconveniences or barriers?
         Almost no
      iii) What type of people do you want to meet? What kind of features/characteristics do you want them to have?
         Would like to spend time with friends
5) What's your ideal way of making friends? In-person? Online? Randomly exploring? Using data to pair up?
   In-person/randomly exploring. She seldom tries making friends online because she thinks it is hard to make friends without real conversation.
6) What do you think can be created or improved for people to make connections or build friendships on campus if they want to do so?
   Have more in-person activities.
7) If there is a platform or an app to help you make friends, would you like to use it?
   Yes.

Problem Statement

From the previous interviews, we can see that people prefer to make friends in person rather than simply online. However, people tend to stay in their comfort zone and stick to certain friends although they intend to establish new connections. So, it is hard to see whether a person wants to build connections with others and prevents them from establishing new connections or making new friends. Some people don't necessarily need to make new friends, but they still hold the perspective that finding someone with the same interests or needs, such as having a buddy to study together or do sports, can be a great option to build the community tighter.

Designing Feedback Tools and Collecting Feedback

One of the projects was to improve a prototype that we created before. When we designed the interface, we didn't involve any users, which means we were trying to create a design for users, but we didn't know how users feel about the design, whether they have any difficulty interact with the design. In order to improve previous design, I first used cognitive walkthrough. While doing cognitive walkthrough, all participants need to complete a table. The table not only records each step users have tried to complete the task but also provide clue about how difficult for users to know what they can try next and whether they can successfully reach their goals by doing certain actions. But since I did a cognitive walkthrough in class with a group of people, by comparing the results, I found that doing cognitive walkthrough alone is very different from doing it in a group because with a group of people, some people would bring up different ideas and discuss possible solutions. I still remembered that when we were browsing mtholyoke website, everyone was complaining about the student entry is put in the very bottom part which needs to scroll to very end to see it. And some people just said what if we put it in the upper part, and we then discussed whether it would work and what currently in the upper part can be replaced. (not necessarily in a high priority) I realized that cognitive walkthrough is a very good approach to utilize with a group of people since discussion helps with brainstorming possible improvements.

For the project, I also used interview. Since it was a semi-structured interview, I prepared some questions for learning about how certain they are about the actions they did are the correct actions, and how intuitive the design is for users to learn and use. And interview results let me realize that even if evaluators can achieve the goal at the end, and the process seemed to be very easy by only looking at results from cognitive walkthrough, it doesn't mean evaluators didn't struggle or firmly believe they are doing the correct actions. Sometimes even though each step they tried were correct, they were not confident about whether the action can lead to achieve the goal before they did an action. And sometimes even though sometimes they could notice there are something that they could try, and it might be the right performance, this process might take much longer. Therefore, by doing interview, we can get more useful information about user experience than doing cognitive walkthrough individually.

(Below are individual cognitive walkthrough results VS interview results)

Step	Will users try to achieve the right result?	Will users notice that the correct action is available?	Will users associate the correct action with the result they're trying to achieve?	After the action is performed, will users see that progress is made toward the goal?
1-click on view detail	yes	yes	yes	yes

2. Interview:

Based on the result I got from cognitive walkthrough method, I revised the questions a bit and did the interview. I will summarize the interview results and put reflection below.

1. *When you see the web page, do you know where to start, in order to complete the task?*
   Summary: For this question, most of them answered yes. There was only one person mentioned about two "Price" buttons, so I asked her some follow-up questions. She said in the beginning she was very sure that the "View detail" button would lead her to find out the student discount. Because since this is the first time that she saw the web page, she just wanted to spend more time and look more carefully, and then she found out the "Ticket Pricing" button. And she started to think which button she should click on. She supposed these two buttons should display the same information but in different order. For example, "View detail" will mainly focus on telling the student discount; however, "Ticket Pricing" might not emphasize student discount, instead, it might show the price for different people, such as adults, elders, children, etc. The reason why she chose to click on the "View detail" is that the task is asking for specifically student discount, so she thought it might be the more direct way to check the discount.
   Reflection: Even though I haven't developed "Ticket Pricing" page, I think what the student said make sense. Since we have a distinct button for navigating student discount emphasized page, then it's reasonable to make "Ticket Pricing" page to lead to page exhibit all ticket prices. Although the student discount emphasized page also includes prices for other people, it separates student price from others by areas. I think for "Ticket Pricing", all prices should be listed in an order that same as their original website have, which is different order comparing to the one in "student discount" page.

2. *Does the time that you spend on the task match with the time that you expect?*
   Summary: They said the time they spent was similar to what they expected to take. They expected address and price should have some buttons which can redirect them to another page at the top or bottom of the homepage, and they did find those buttons. Some people mentioned that since the discount is highlighted by bright color, which allowed them even easier to find out.
   Reflection: results indicate that using a separated area filled with color to highlight student discount is a good choice which works very well.

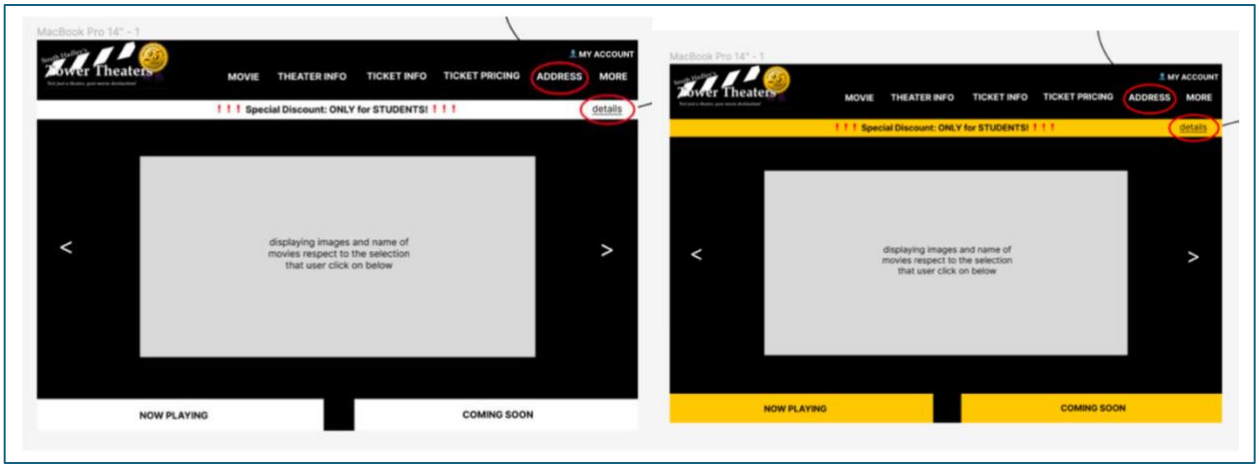
3. How many steps/clicks are you expected to complete the task?
   Summary: They all answered one or two steps.
   Reflection: Results from cognitive walkthrough tables tell this match with their actual interactions.

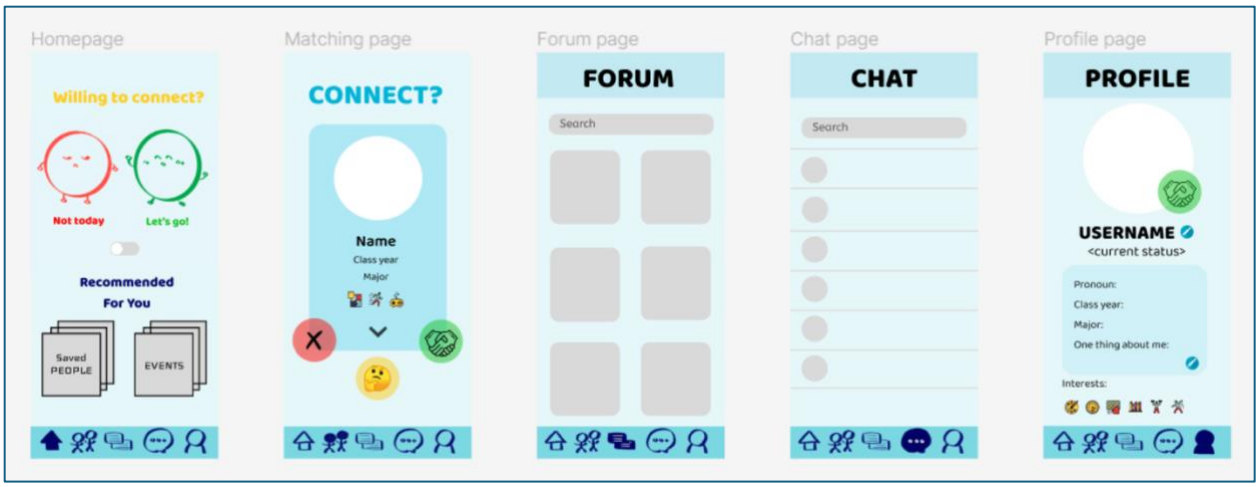
Build prototypes

Building a prototype is not only putting everything which designers think is important up. In addition, designers should consider about things like how to reduce visual complexity, how to let some components draw more attention than others.

Even before I took this HCI course, sometime when I used a website/app, I would think their designs were not good enough because some website they did include all information that I want to check, but they are really difficult to find. When I browed the website, I had to read everything line by line. As a user, this was something I don't want to happen, and I hope when I look at the website, I can easily know what I should do next. After taking this course, I learned that there are various ways to apply visual hierarchy. For example, by using contrast color and bigger size, using special placement, and adding unusual movement can draw more attention. Grouping objects by similarity, proximity common region and symmetry can reduce visual complexity. In my later projects, I applied those methods as well. For example, when I redesigned the website Tower Theaters for MHC students, I highlighted student discount by using a distinct color for that region. Since prototypes always contain several pages, I put buttons which allows users to switch to different pages. I always put those buttons in a common region either on the top or on the bottom of the page. The common region enables users to know here is navigation bar which can redirect them to other pages.

(Below are some prototype examples that I did in different projects which all considered about applying visual hierarchy)





Be Clear about Design Goals

In here, what I mean by design goals is not only a big picture, like helping MHC students build connections, but more specifically address different demands, like helping students who want to meet new people to make friends and students who want other people to join in the same events to advertise the events. Sometimes I know a general goal of my design in the beginning, but one big goal is composed of several small goals. The first three points above guide me step by step which allows me to be clear about what people need, what are the problems that they want to address, and why they existed technologies are not helpful enough. Next, I can set up small goals and think about possible solutions. And then, by putting all the solutions in one design, it becomes an approach to achieve the big goal.

After setting small goals, we can start to create a design. Throughout the whole design process, the most important thing is to remember our design is human-centered design because we should always put human in the first place. At first, I always forgot that I was doing human-centered design because all projects I've done before were technology-centered design. Since they basically differ in purpose and focus, the things that I need to consider in design process should be different as well. In order to design a good human-centered design, I always remind myself by asking myself "Is it a human-centered design?" Later on, it seems that I have already considered user experience unconsciously because I would think whether users can understand where a certain button will lead them to, whether color is harmonious in the context, and learnability of the design.

Conclusion

Most of the CS courses I took before taught me how to be a good programmer, but this course let me be a designer who put human's needs first and consider about learnability and usability. I learned a more efficient way to brainstorm ideas, identifying the right problems, different ways of collecting feedback, building user-friendly prototypes. And most importantly, always being clear about design goals.