INFO / COMM 3450 / INFO 5355 2021S

Assignment 3 (Group Part)

Designing Human-Computer Interaction - Design the Right Thing

Instructor: Qian Yang (qy242)

Through a thorough user study, you have so far gained a deep, holistic understanding of your users. In this assignment, you will be making progress in the design stage of the human-centered design process.

Assignment release: March 31st, 2021 noon EST (Wednesday)
Assignment due: **April 14th, 2021 noon EST** (Wednesday)

Learning goals

- Envision "preferred futures" for the users based on user research
- Ideate many potential technological solutions to move users from the status quo to the preferred future

Suggested Timeline

- Finish Part 1 and 2 by the end of the first weekend (April 4th)
- Spend the rest 1.5 weeks on Part 3 and the required discussions

Submission Instruction

Follow the instructions and edit this file. After you have completed all the tasks, **save the file as a pdf** and submit it to Canvas.

Use initials to differentiate ideas from different group members. **Do not include students' full names or netIDs in the assignment** to allow for anonymous grading.

Lead TA of the Assignment: Pin-Sung Ku (pk537). If there is a math error in your grades, please contact the lead TA. For all other questions, post on Piazza.

Grading rubric

- **Q1.1 preferred future brainstorming - completeness (2 pts)**
- **Q1.2 preferred future revision and rating - completeness (2 pts)**
- **Q1.3 preferred future - creativity (4 pts)**
  The preferred future is not yet a reality. No existing technology can realize this vision entirely yet.
- **Q1.3 preferred future - justification (4 pts)**
  The preferred future is grounded in user interview findings. The rationale can convince the grading TA that realizing this preferred future is important and meaningful to the user group in question.
- **Q2 contextual factors - completeness (2 pts)**
- **Q2 contextual factors - creativity and justification (4 pts)**
  The contextual factors listed are 1) grounded in user interview findings and 2) relevant to the problem space.
- **Q3 ideation - completeness and clarity (4 pts)**
  Each member has created 8 design ideas. The texts on hand-drawn sketches are intelligible. The grading TA can understand that idea based on the text and/all visual descriptions.
- **Q3 ideation - creativity (8 pts)**
  All design ideas are distinctive from each other. Each envisioned a different type of technology or a different type of new user interaction.

Part 1. Envisioning Preferred Futures

User research provides you HCI designers with rich descriptions of how users currently live their lives (journey map) and their goals (user motive affinity diagram, point-of-view analysis). Based on these insights, you will now work to envision a better future for your users.

Preparation: If your group has previously identified more than one type of user (i.e., you have identified multiple paths in the user journey map and/or written multiple point-of-view statements), **choose one type of user** to focus on for the remainder of the semester. Pick the type of user that the group is most excited about designing technologies for[1].

Step 1. Each group member works independently and envisions >= 3 possible futures for your user group. Start each possible future description with "(A user group) can _____." Fill in the thing(s) you want to help the users to ***do*** **or** ***feel*****.**

The possible futures each member identifies should cover all **three types of possible futures**:

1. A future where **the users' positive emotions and experiences are amped up and celebrated** (To find inspirations for this type of "possible futures", look up users' positive emotions in your journey map and affinity notes;)
2. A future where **the users' current problems are addressed, e.g. unfulfilled desires fulfilled, competing motivations balanced, etc.** (To find inspirations for this type of "possible futures", look up users' current problems in your journey map and their desires in your user motivation affinity diagram;)
3. A future that **radically reimagines how users fulfill their needs and desires** (Tip: Look up the user motivations in your affinity diagram -- Can you think of entirely new ways of fulfilling these user needs beyond what has been outlined in the journey map?)

For example:

> A group of designers is studying how computational technologies might help clinician teams make better heart implant decisions. Through user research, they found that 1) Physicians do not any need for decision support when handling most patient cases; 2) For difficult patient cases, physicians currently get "decision support" from colleagues; They find such social

[1] If helpful, revisit your team contract about the disagreement resolution mechanism.

decision support satisfactory and prefer it over computational decision support; 3) The clinician teams are highly hierarchical. Mid-level clinicians such as residents and nurse practitioners often do not participate in decision discussions; Physicians make the final decisions.

The designers can envision different preferred futures:

- Physicians can more fully and effectively leverage social decision support, i.e. their colleagues.
  (This possible future envisions a positive experience -- social decision support -- to be celebrated.)
- Mid-level clinicians can fully participate in implant discussions without worrying about offending their physician bosses.
  (This possible future envisions an unfulfilled user need/negative emotion to be addressed.)
- Physicians can be rewarded for taking implant decision advice from computational technologies and can be penalized otherwise.
  (This possible future re-imagines the factors physicians will consider when making an implant decision. It reimagines the "user journey" of clinical decision making.)

***** Your Task Q1.1*****

Project Topic: **How can we use computational technologies to provide non-clinical support for the successful rehabilitation of eating disorders?**

Point-of-View Statement: (POV statement 2) In the user journey the participant has been pressured by societal forces towards unhealthy eating habits and being apprehensive towards foods. These led the user towards a downward negative spiral of emotions concerning their appearance and their social network, continuing to cause them to isolate themselves from family and friends to hide the disorder such as lying and making excuses to their network to fit in. After experiencing all the negativity associated with the disorder, they were ready to recover and started making changes towards recovery but were unsure about the efficacy of professional help and struggled daily. However, they are still in a daily struggle towards the end goal of recovery as they are always worried about relapsing into unhealthy habits and actively avoid reading about the disorders of others.

Each member envisions no less than 3 “possible futures” for this user group and puts them into the table below.

Group Member	Possible Futures
HK	People recovering from eating disorders can look at food in a less hyperconscious light and gain a positive relationship with their own bodies.
HK	People recovering from eating disorders can view food positively and without worrying about relapsing into unhealthy eating habits.
HK	People recovering from eating disorders can gain the support they need from their friends and family and not have to face recovery completely alone or by depending on professional help.
YF	People recovering from eating disorders can reduce anxiety towards body shape and want to have a social life with friends than before.
YF	People recovering from eating disorders can gain more help from the other people or social professional help and recovery with encouragement and love with families and friends.
YF	People recovering from eating disorders can take some activities to make them more confident about their body shape or less pressure that they cannot recover from the eating disorders.
AT	People recovering from eating disorders can experience positivity and happiness again with their friends and family in the context of food
AT	People recovering from eating disorders can find alternative, effective and viable solutions to professional help

AT	People recovering from eating disorders will consider the benefits of emotional and scientific support as having equal weightage to those of professional help Another way to word this: People recovering from eating disorders will no longer consider professional help as the primary support available and effective for recovery
AT	People recovering from eating disorders will feel confident that they will be able to fully recover with their choice of support
AT	People recovering from eating disorders will feel less ashamed and competitive in seeking out like-minded and similar individuals going through the recovery process for moral and emotional support
EQ	People recovering from eating disorders can find ways to consistently maintain healthy eating habits without relapsing independently
EQ	People recovering from eating disorders can be better adjusted to society, without stigmatizing or extreme beliefs or attitudes concerning food.
EQ	People recovering from eating disorders can recover independently in a healthy manner without any outside help and without complications.

Step 2. Share the possible futures each group member identified with each other. Merge duplicate or similar ideas. Add new ideas as they emerge from the group discussion.

Step 3. Discuss and select one possible future as the "preferred future". For the remainder of the semester, you will design technology products and services to move your users from the status quo (as depicted in your affinity diagram and journey map) to this preferred future. You want to select a preferred future that is:

- **Implementation neutral:** This preferred future should not indicate any specific solution. It should be broad enough to invite a wide range of potential technology solutions.

- **Significant to the user group:** Moving from the status quo to the preferred future would yield significant, meaningful improvements to the users' lives and experiences (rather than bringing marginal benefits or minor conveniences.)
- **Excitement to the project group:** How excited are you about this idea and about designing technology products and services that can realize this future?

***** Your Task Q1.2*****

First, copy the possible futures from Q1.1 and paste them in the form below. Combine, revise, and improve on this list of possible futures as the group members discuss each of them (step 2). Next (step 3), Make sure that all remaining possible futures are implementation-neutral. Finally, rate each of the possible futures on 7-point scales based on their significance to the user group and the excitement among the project group members. 1 means trivial/not exciting; 7 means highly significant/exciting.

Group 5 note: We calculated the numbers below using an average system. Each group member ranked the futures independently and then we averaged each of our scores. We then summed up the average score for the "significance for the user" and the "excitement" column for each future and determined which future had the highest overall score. This was the future we decided to choose for our project.

Envisioned Possible Futures	Implementation Neutrality	Significance for the Users	Excitement
People recovering from eating disorders can look at food in a less hyperconscious light and gain a positive relationship with their own bodies.	Y	AVG: 6	AVG: 4.33
People recovering from eating disorders can view food positively and without worrying about relapsing into unhealthy eating habits.	Y	AVG: 5.67	AVG: 5
People recovering from eating disorders can gain support in terms of encouragement and love from their friends and family and not have to face recovery completely alone or by depending on professional help.	Y	AVG: 5.33	AVG: 5.33

People recovering from eating disorders can reduce anxiety towards body shape and wish to have a better social life with friends than they currently do.	Y	AVG: 4	AVG: 4
People recovering from eating disorders can feel more confident about their bodies and feel less worried about relapse by receiving positive affirmations about themselves.	N		
People recovering from eating disorders can experience positivity and happiness again with their friends and family in the context of food	Y	AVG: 5	AVG: 4
People recovering from eating disorders will no longer consider professional help as the primary support available and effective for recovery	Y	AVG: 5.33	AVG: 5.33
People recovering from eating disorders will feel confident in the efficacy of their choice of support	Y	AVG: 5.67	AVG: 5
People recovering from eating disorders will feel less ashamed and competitive in seeking out other individuals going through the recovery process for moral and emotional support	Y	AVG: 6.33	AVG:5.33
People recovering from eating disorders can find ways to consistently maintain healthy eating habits independently after recovery without relapsing	Y	AVG: 6.67	AVG: 5
People recovering from eating disorders will feel empowered and safe to expand their food choices beyond their current restrictions	Y	AVG:5.33	AVG:5.67

People recovering from eating disorders can successfully recover without help from professional or social groups and without complications during the process	Y	AVG: 5.33	AVG:4.67

***** Your Task Q1.3*****

Based on the ratings above, identify one "preferred future" that your group will work to realize. Briefly explain its significance: What observations and insights from the user interviews made you believe that realizing this future would be a big deal *for this user group*?

The preferred future: People recovering from eating disorders can find ways to consistently maintain healthy eating habits independently after recovery without relapsing

Rationale: We decided to choose the aforementioned preferred future for many reasons. Firstly, its feasibility in implementation was a big factor as we recognize that there are multiple ways a solution can be created to accomplish this future. Another big factor in our decision was the positive impact it could have on our user group- our preferred future deals with giving confidence and ensuring individuals successfully maintain their recovery, which we found was a big concern through our user interviews; many individuals try to implement healthy habits such as exercising and therapy to maintain their recovery. Our group recognized that many individuals feel insecure and unsure about their ability to successfully maintain their recovery- hence, creating a tool that could help individuals feel more confident and help them establish permanent maintenance habits would have a big impact. Our group also found that individuals prefer different ways to keep themselves and their minds healthy. With this variety in mind, our group is excited about the possibility of personalizing our solution for each individual's preferred maintenance method. We also foresee a potential interaction with other forms of support such as professional therapy or familial/social support which could be interesting and challenging for us to explore.

Part 2. Setting Design Goals

Design goals are formal descriptions of

1. what the computational technologies (that you are about to design) should do for users **(functional goal(s))**, and
2. factors that will impact the effectiveness of the technologies you are about to design (**contextual factors)**.

The preferred future indicates the functional goals. For example, the preferred future "physicians can more effectively leverage decision support from their colleagues" indicates that the computational technologies to be designed should "enable physicians to more effectively leverage decision support from their colleagues."

Identify contextual factors based on user interview findings. Look up the journey map and consider: What are the factors that are beyond participants' control, but could affect their behaviors and/or emotions? Among these factors, which might positively affect or put constraints on the effectiveness of the technological solutions? These factors can be things about the participants themselves that are out of their control (e.g. family obligations, health conditions), about other people, about the physical environment (e.g. weather, size of the workspace), about the larger environment (e.g. social expectations, cultural environment), among others.

For example, the contextual factors that might affect whether a technology would be effective in helping physicians to leverage decision support from their colleagues:

- Extremely busy physicians, needing to see >30 patients every day (a contextual factor about the participants themselves)
- Extremely busy colleagues (a contextual factor about other people)
- The hierarchical workplace culture within clinician teams (cultural environment)
- Physicians' offices being far away from both clinician teams' shared office and the hospital wards (physical environment)

Taken together, the design goal of this example project would be to design technologies that enable physicians to more effectively leverage decision support from their colleagues, in hierarchical workplaces, given that both the physicians and their colleagues are extremely busy and often sit in far-away offices.

***** Your Task Q2*****

Building upon and expanding on the preferred future, identify your group's design goals.

Functional goal(s): The computational technologies should enable individuals recovering from eating disorders to find healthy, consistent ways to independently maintain recovery and prevent relapse

Contextual factors:

- Unaware or unhelpful friends and family
- Inaccessible professional help affecting
- Individual recovering from eating disorder struggling with other mental illnesses or problems as well
- Financial constraints affecting food choices that are possible during recovery
- Social surroundings and unavoidable interactions posing challenges often, during recovery

Part 3. Design Ideation Via Sketching

Step 1. Every group member brainstorms independently and ideates at least 8 unique ways in which technology can help to achieve the aforementioned design goals. **(individual)**

These design ideas should be simple; *No detail necessary*. You can communicate your design ideas textual and/or verbally -- with 1-2-sentence text descriptions, with hand-drawn sketches; with a combination of annotated images; or a combination of these communication methods. For example, some ways in which technologies can "enable physicians to more effectively leverage decision support from their colleagues, in hierarchical workplaces, given that both the physicians and their colleagues are extremely busy and often sit in far-away offices."

1. Clinicians use an anonymous, internal social media platform to advise the physicians;
2. When rounding patient wards, physicians use mobile software that helps structure their discussion with clinicians;
3. The whole clinician team uses an email service that automatically synthesizes clinicians' emails and summarizes them into a report for the physicians;
4. After seeing each patient, the clinical team can discuss the patient case with a VR headset; In the VR environment, all clinicians can see a shared representation of the patient condition (e.g. CT scan) and give anonymous comments;

5. The clinician team uses an anonymous voting system to vote on the patient treatment. Physicians need to file explanations to hospital leadership if they want to veto the majority vote;
6. ...

Your designs in this assignment will only be graded based on the *variety* of ideas you generate. The key here is to consider a wide range of possibilities:

- **Consider many different types of technologies:** What are the different types of technologies that can help your users to move towards the preferred futures? (Games? Educational platforms like Coursera? Software service platforms like iTunes? Adding computation capabilities to currently non-computational objects? New wearable devices? New mobile devices? AR/VR devices? Smart environments like smart city/office/building? What else?)

- **Consider the whole spectrum of technical feasibility**, from practical, near-future solutions to wild start-up-ish ideas that could transform the whole society;

- **Take inspirations from the user interviews:** Revisit the journey map -- What behaviors made some participants more successful than others in fulfilling their needs? What made some participants feel more satisfied than others? Can technologies promote these behaviors, thereby improving user satisfaction?

- **Google is your friend:** Beyond the interviews you have conducted, many other resources on the Internet (Reddit, Facebook, Twitter, Quora, etc.) could tell you what your user group cares about and what solutions they have found. Find inspirations there as well.

- **Make contextual constraints your design resources:** Constraints spur innovation. Embrace the contextual constraints you have identified and think about how you can turn them into something useful. Can the contextual constraints about the people around your users become social resources? Can the physical environment constraints enable novel technology solutions that would only work in that environment?

Step 2. Each member shares the design idea. Other members ask clarification questions OR comment on potential ways to build upon the idea (e.g. "This software would be even better if it's…") **No criticism is allowed at this stage.**

Recall this is a group assignment. It's in all group members' best interest to help each other in generating better ideas.

Step 3. Each member revises their ideas.

*** Your Task Q3***

Each member describes their 8 design ideas below.

Group member 1 [HK]:

1. People recovering from eating disorders use a mobile app to find people not recovering from an eating disorder to support them. This mobile app could be for people who may not have friends/family that are supportive of them during the process.
2. People recovering from eating disorders use an app to connect with people who are currently struggling with an eating disorder so that by helping them, they can help themself.
3. Family/Friends use a website to connect with others who are serving as support to help their mutual connections who are recovering. This would essentially allow friends/family to exchange best practices and tips so they can help their loved one with their recovery process.
4. People recovering use a series of alarms to remind them to keep having healthy eating habits. They could set the alarms prior to each day or each month, so that they go off accordingly.
5. People recovering use some kind of reward system tool and/or mobile application to encourage them to keep having healthy eating habits. The reward system could include things such as gift cards or even some type of in-game currency to buy things within the app.
6. People recovering utilize something like an Apple Watch to plan meals. As a watch it would be with them for the majority of their day so it would be helpful for reminders.
7. Professional help using some kind of technology such as an online (social media) platform to possibly connect their patients with each other. There could be a system where patients can input some of their social media handles.
8. People recovering use some kind of technological/digital calendar that could help with inputting moods/thoughts by a simple lights/color system. Everyday they can push a button or have something light up on this calendar, and after a longer period of time they could look back and easily see the general big picture of how they have been feeling or what they have been thinking.

Group member 2: [AT]:

1. Individuals recovering from eating disorders would use an app or website that sends daily reminders and notifications to engage in pre-set habits that the user inputted beforehand
2. A matching platform to connect an individual with an online therapist/nutritionist who can monitor progress and guide the individual when they are on the verge of relapse. This would be a time-saver and possibly a low-cost option compared to going to therapy
3. An online notification system connected to family/friends' devices that notifies them when the individual recovering from an eating disorder is disengaging with their maintenance habits
4. An app to suggest personalized techniques or habits for the individual recovering from an eating disorder to adopt based on their specific disorder, lifestyle, environmental factors and perhaps even syncing a report from a therapist if they had one. Essentially, the app would provide post-therapy management for somebody who is looking to retain the healthy habits and attitudes they established with a therapist.
5. A video-platform that draws scientific videos from the internet to help the individual understand what they've been through and techniques to cope as a way to maintain recover
6. A messaging system that sends a positive affirmation or reminder routinely to reinforce positive mental attitudes towards food
7. A predictive platform and tracking system that is able to detect danger of relapse before you are consciously aware of it. This could be done by the user perhaps inputting mood everyday or logging how many meals the user has had and the system would use this data to generate predictions.
8. A social platform where individuals recovering from eating disorders are able to connect with others going through the process to share tips and best practices for maintaining recovery

Group member 3: [YF]:

1. People recovering from eating disorders can use diet apps to track the eating habits. The app could have nutritional tips that would help with the specific diet/eating habits that they are planning to follow
2. People recovering can use a recommendation system that provides TV shows related with positive emotions and even some eating shows for the user to improve their attitudes towards food and eating. The system would take into account personalized preferences and detect which shows are engaged with to improve future recommendations
3. People recovering can use music apps with relaxing sounds that sync with the user's eating time and possibly when the user is feeling negative. This could be done by inputting mood-related data or meal frequency to serve as a proxy for "feeling negative"

4. People recovering can make a daily calendar by weeks to help them track actions in the past. This daily calendar would let them write/type out the actions that they took in their recovery process, such as what they may have eaten for their meals or any exercise they may have done to regulate their mental health.
5. People recovering can use an assistant tool to help them set a specific time or environment so that the user can de-stress effectively with meditation
6. People recovering from eating disorders can use personalized apps that provide positive and encouraging content which can help the user improve their general self-confidence. This app could, for example, prompt the user to repeat an affirmation from the app that they can then upload on the app for the app and themselves to track their progress and listen to later.
7. People recovering from eating disorders can use a technology that facilitates the transfer and management of weight-measurement data to allow the user to effectively track their progress
8. People recovering from eating disorders can use a mathematical online tool that helps the user channel negative energies towards productive problem solving by providing adequately challenging problems for the user to solve daily

Group member 4: [EQ]:

1. People use an application to help them get their attitudes right at the beginning of every meal and get the correct mindstate. The application would involve an alarm that would go off at designated times right before every meal and guide them through a short meditation like session in order to allow them to come to a more calm and relaxed state before every meal.
2. An application that allows them to vent out emotions and stress through a digital diary, helps them keep track of their own progression. This application could be either audial or with an application like microsoft one note that would keep track of all the past emotions and stress. It would help the individual vent out emotions and see themselves getting better and better every day.
3. An application that forces consequences on people who skip meals such as losing money. If individuals skip meals within a certain period of allotted time that's given for breakfast, lunch or dinner. The individual either loses money straight from their bank accounts or Venmo.
4. An application that teaches the people around them how to help and deal with a friend going through an eating disorder. This would be an application that would help guide others on how to be helpful to friends and family going through the disorder, the different stages the individual may be at and what the best course of action would be at the given moment.
5. An application that connects people with other eating disorders anonymously to form a support group, such as Alcoholics Anonymous. The application would work much like tinder except all you have to do is sign up and go to a well ventilated public outing after a maximum of 20 people are matched. If there are more people they could be broken up into smaller groups with similar numbers but a minimum of 7 people.

6. An application that allows its users to pre-set personalized videos that they find inspirational and motivational for the app to play when they feel relapses about to occur. The application would draw motivational quotes and posters from places like instagram whenever the user showed inclinations of depression or bouts of relapse.
7. An application that automatically orders a variety of food for the user, thus they have no choice to go pick it up and hopefully eat it lest they waste money. The application would order food on a predetermined time and the user would have to eat the food as it will be perishable, otherwise they are wasting money.
8. An application that connects low-income users with cheap, and healthy food that fits their preferences and needs to recover from the eating disorder. This mobile app would take in the preferences of the user and would try to find the cheapest available options to incentivize the user and if all else fails the user may have to make the food themselves.

** Congratulations! You have reached the end of the assignment! **