

CS160 Final Report

Perk Up

Group 3

“The Extra 10%”

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Project Description

Our application combats symptoms of depression by providing a chatbot that can talk to and sympathize with users. Furthermore, with our Adventure feature, our chatbot suggests locations that a user could visit to socially interact with other people. By providing Augmented Reality gifts that can only be opened at these locations, users are incentivized to explore locations where they will socially interact with other people, helping them out of their depression. Finally, an adventure log allows a user to write down their thoughts and feelings after their adventure, providing an outlet for them to process their trauma.

Design Process

Our design process took us through three distinct iterations of our design. We first started with an idea to generate an application that would provide a short burst of happiness for users by showing funny videos integrated with general tasks such as scheduling. After conducting initial user interviews, we settled on an application that centered around a chatbot that would listen and interact with users who needed an outlet to vent their thoughts and feelings. This would be combined with an Augmented Reality environment and mascot, Penny the squirrel, that would transport the user to a new surrounding to help them process their thoughts. Finally a journaling feature would track a user's conversations with Penny and allow them to journal their thoughts and feelings.

After reading several studies on how Pokemon Go has helped users overcome anxiety, we redesigned our application to introduce a game-like element to our AR piece. By providing AR gifts, we incentivize users to venture to locations where they have to socially interact with others, easing symptoms of depression. In addition to the chatbot and journaling feature, this would ensure that our application helps those suffering with depression.

The Brainstorm

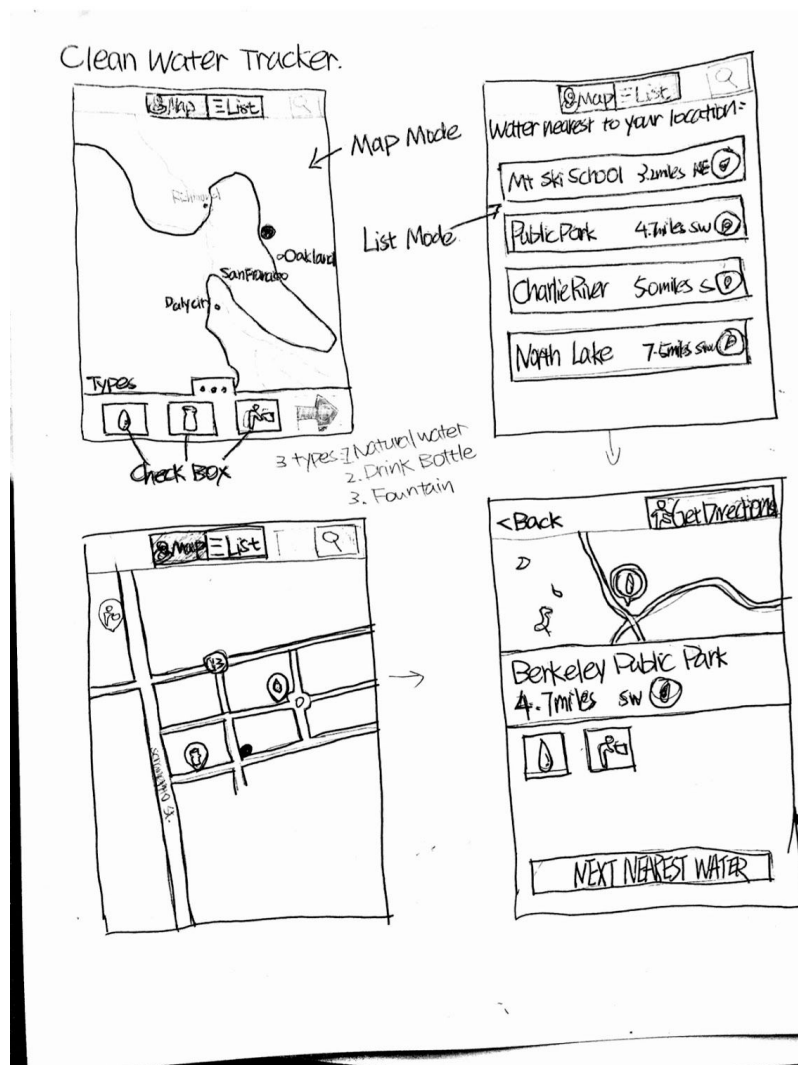
During our brainstorm session we came up with a comprehensive list of 50 different ideas. Some of our initial ideas included an Intelligent Conversation Helper that would help socially awkward people navigate a conversation, a medication tracker for people with lots of medicine, and our initial idea for Perk Up which was to be an application that displayed funny videos throughout the day to help "Perk Up" a user.

Throughout the process we learned that we wanted to work with an accessibility issue we could relate to, either personally or demographically.

Initial Sketches

We sketched out 6 of our top ideas: a clean water tracker, pro bono lawyer search, senior citizen tracker, intelligent conversation helper, diabetes aid, and Perk Up. This process helped us clarify what ideas we were passionate about and what we wanted to focus on.

Clean Water Tracker Sketch

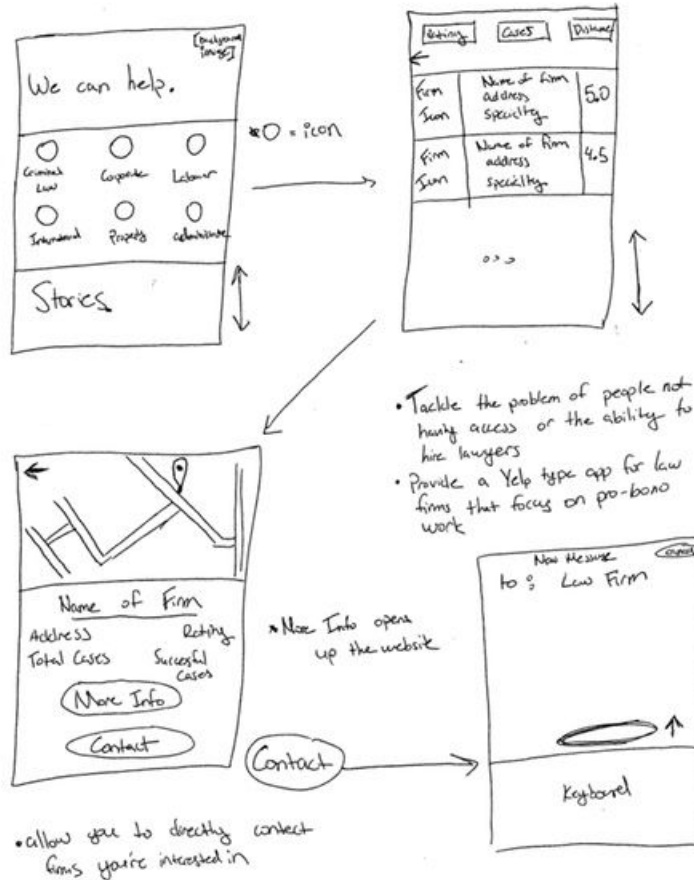


General App Flow

- There 2 modes for users. As the top buttons shows, map mode intuitively displays information on a map and list mode displays them by list.
- In map mode, users can choose 3 types of water: natural water, bottled water, and accessible reservoirs.
- In list mode, users can easily find the water place near them and get the information of distance and direction.
- Once users choose one specific one place to get water, they can see the location on map and the water types inclusive. They can get the direction by third application and see the next nearest water location by one-click.

Pro Bono Lawyer Sketch

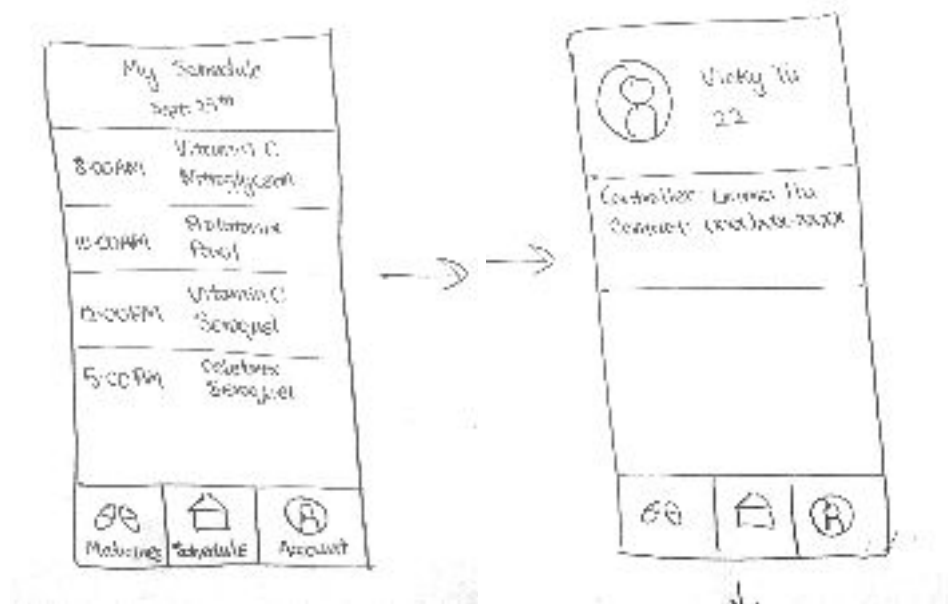
Helping those without the ability or access to hire counsel seek justice. Pro Bono Lawyer Application

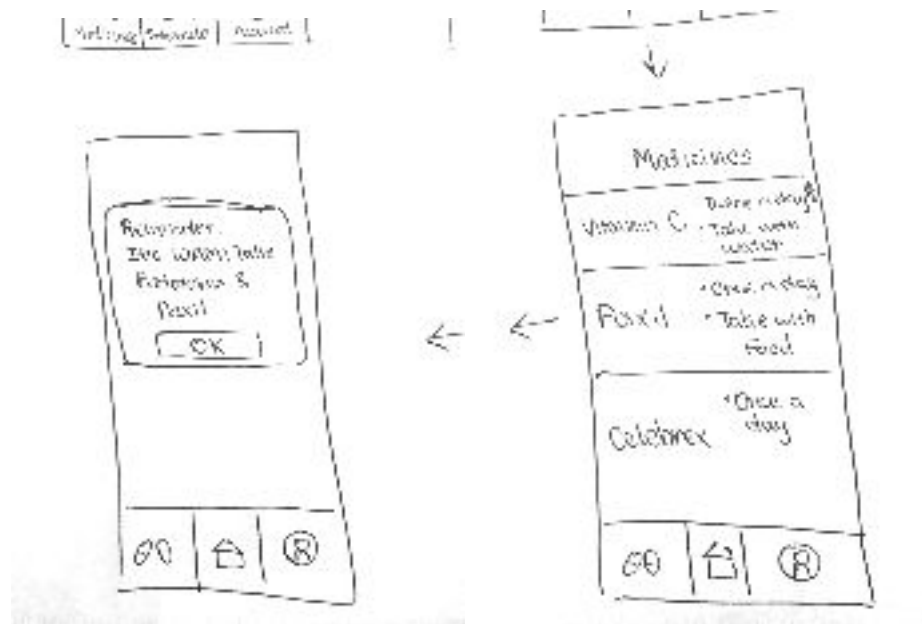


General App Flow

- Six initial icons to allow a user to select which type of law they are looking for. There are also stories available detailing the good work that this app has done.
- Yelp like interface that allows for the filtering of results by rating, location and types of cases a law firm has done.
- Detailed map view of location with additional information for selected law practice
- Direct contact within the app, just like AirBnb

Senior Citizen Sketch

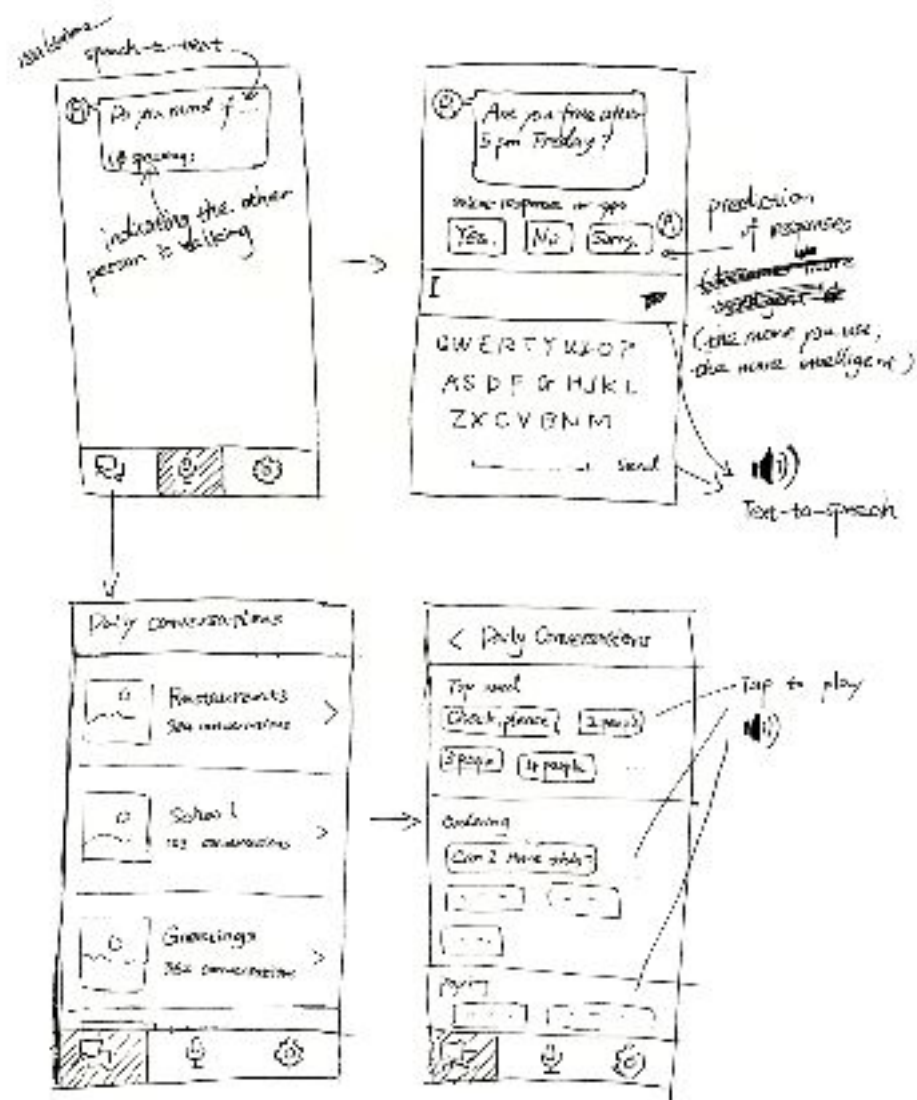




General App Flow

- There are three tabs at the bottom that allows the user to easily navigate to each page.
- The schedule section displays today's schedule of medicine intake for the user. Next to each time is a list of medicines that the user must take.
- The account section displays the user information as well as information about the family member controlling the settings.
- The medicine section is a list of all the medicines the user is taking as well as additional information.
- A notification with an "OK" button pops up when the time comes to take medicine in order to remind the user.

Intelligent Conversation Helper for Hearing Loss Sketch

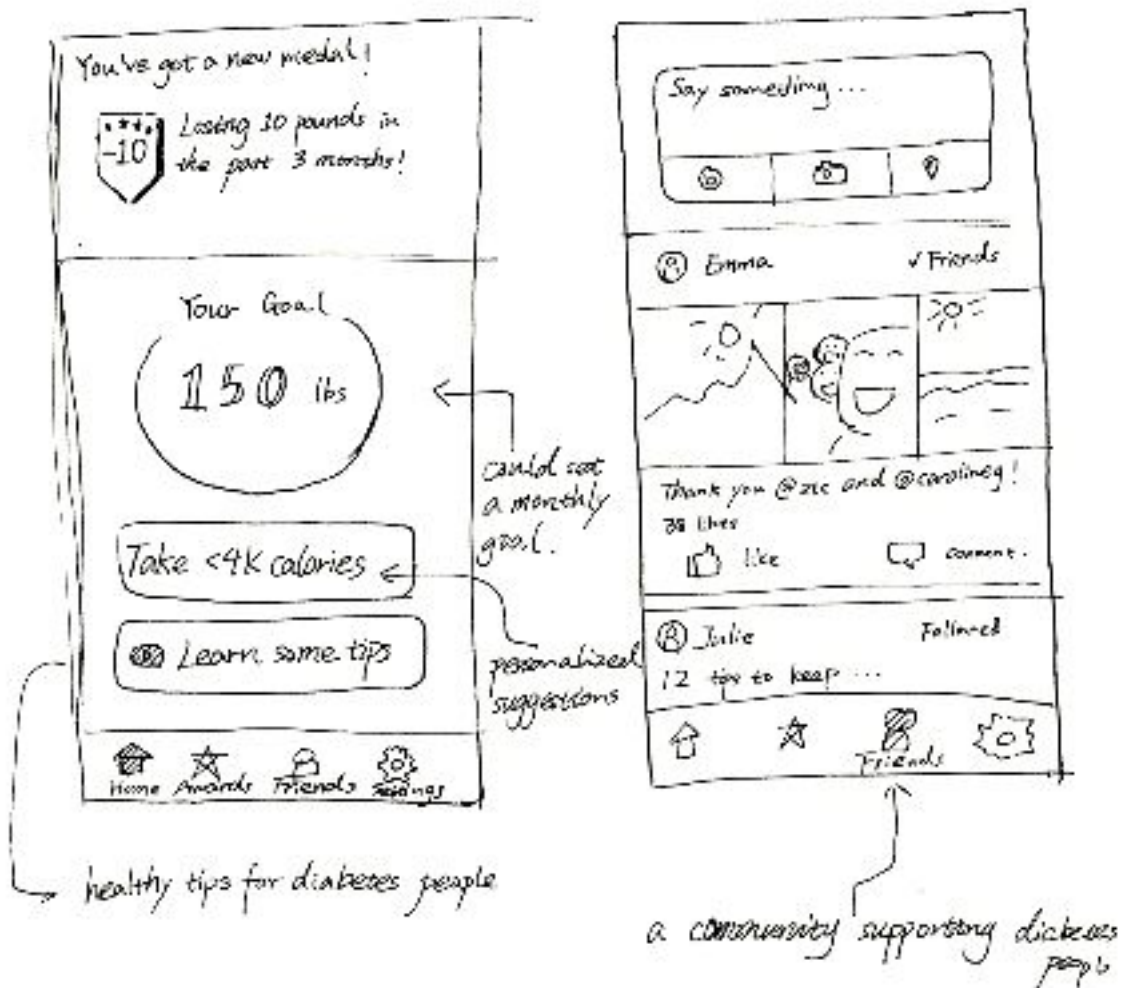


General App Flow

- Help hearing impaired people talk with other people. There are three tabs: "conversations", "speech", and "settings".
- The main tab "speech" uses voice recognition to translate what the other person says into text. (speech-to-text)

- Predict what the user is likely to reply. The user selects one prediction or text whatever they like to play that reply. (text-to-speech)
- Frequently used conversations lie in the “conversations” tab, organized into groups in terms of contexts like restaurants, schools, greetings, etc. The user taps a sentence to say it aloud.

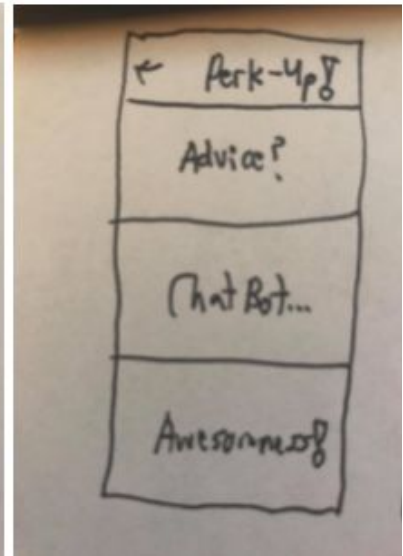
Diabetes Sketch

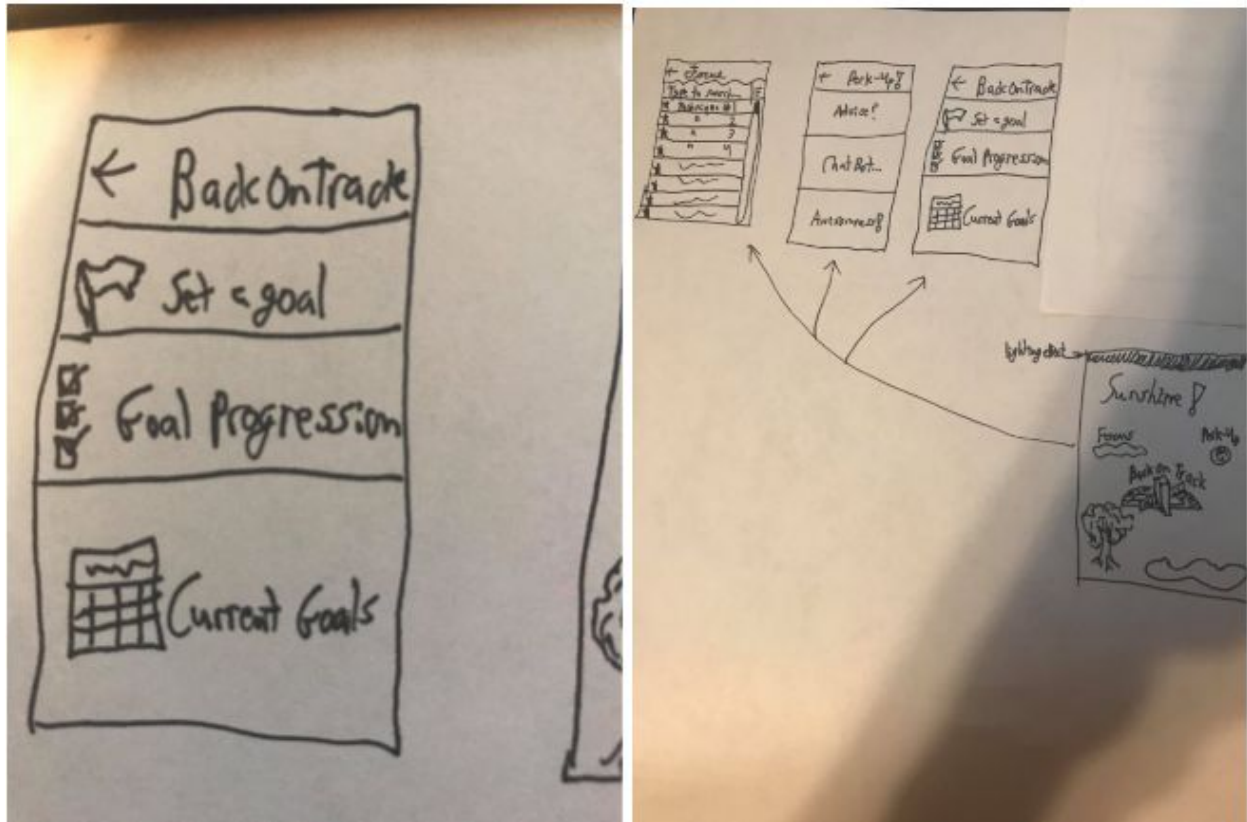


General App Flow

- The app utilizes gamification and makes fighting diabetes fun. With a set monthly goal, the app recommends daily calories intake, meal plans, and life tips for the user.
- The user could view daily goals and meal plans in the main tab.
- The user wins a medal on achieving meal plan / daily intake goals / losing weight. All medals are displayed in the “awards” tab.
- Users encourage each other in the community in the “friends” tab.

Perk-up Sketch





General Flow

- I. Main activity:
 - A. Buttons that lead to activities that hold app features.
 - B. Has peaceful / happy setting (art definitely not set, just placeholder).
- II. Focus:
 - A. Meditation / breathing / yoga / relaxation tutorials and audio to help someone calm down and focus.
 - B. Can filter by most popular, alphabetical order, favorites (that's what the stars are), etc.
- III. Perk-Up:
 - A. Randomly generated advice for dealing with the bad things in life as well as highlighting the good things.
 - B. Chat bot to talk to; building off other chatbot APIs it will help give them advice as well as be sort of a "friend" they can always talk to.
 - C. Videos of people being awesome, cute animals, or funny videos to help anyone cheer up.

IV. Back On Track:

- A. Way for person to set and achieve goals, not matter how unmotivated.
- B. Setting goals can be as specific as fixing a sleep schedule or reminders at certain times to eat healthy foods to as broad as general reminders to study or do certain things.
- C. Goal progression for goals achieved (marked by the user when completed).
- D. Current goals for managing and adjusting current goals to however their life may be changing.

After sketching out our top ideas we came to the realization that we wanted to focus on the Perk Up application, as it dealt with the issue we thought we could relate to best.

Initial Product Description

When 47% of your generation (millennials) have depression, it's easy to see how widespread of a mental illness it is. Depression can be debilitating in many ways, especially in one's lifestyle and routines. Depression makes people feel out of touch with everything in life; from their friends to basic activities, they can't enjoy life the same way anymore. People with depression are likely to feel empty and sad, have poor memory and decision-making, weight fluctuations, poor sleep schedules, and a bevy of other health issues. This can leave depressed people incapable of continuing to truly live as their days blend together.

Because depression has particularly affected our age demographic, we wanted to design an application that could help with this particular problem.

Initially our app's goal was to help implement positive treatment for depression into a users daily features, such as scheduling and goal building. We hoped this would help people build healthy routines to achieve their goals while maintaining a positive outlook. The application would include a happiness feature that allowed a user to boost their endorphins from watching cute animals, awesome people or funny videos. There would also be a random advice generator as well as chatbot for direct advice and interaction with the user to help them feel less lonely. Finally there would be tutorials on relaxing features, such as yoga and meditation instructions, to help users relax.

Scenario

Our original scenario focuses on our initial marquee feature, a cheerful video player, and our second feature, a chatbot.



User Studies

Target Demographic

Our target demographic is people aged 18-25 years old. We chose this as our target group because they have access to smartphones, are readily available all around college campuses including our own, and are the largest percentage of people, based off of age groups, that have depression. According to the Substance Abuse and Mental Health Services Administration, 8.4% of college students experience a major depressive episode. This is an important time in one's life; typically the ages when you leave high school and college and must continue on in your life as an adult. People must balance all sorts of new responsibilities while maintaining old ones. Getting depression around this age is detrimental to future success as it will become increasingly difficult to get a grasp of one's life. Overcoming depression is a difficult endeavor and some campuses may not provide sufficient resources, but we believe an application could help eliminate some of the symptoms of depression.

Initial Interviews

(Transcripts are available in the Appendix)

Interview #1

Background and Process

I set aside a quiet location (office) where the two of us could talk. I began by asking some questions about the interviewees background and thanking them for coming. I then drew on a list of pre written questions which led to natural conversation and several questions I would come up with on the spot. The questions were focused on trends that my interviewee noticed in their work with people suffering and working through anxiety and depression.

This interviewee has worked in a lab that studied the effect of age on mental health in an attempt to answer the question whether people of a certain age are more likely to be depressed. This interviewee had interviewed over 17 college aged individuals who had suffered from depression and anxiety. The interviewee was able to

provide a broad brushed summary of certain traits that our target user group would likely have and experience.

While the interviewee themselves has not suffered from depression or anxiety, they were able to provide a third person perspective that consolidated the interview results in a concise description of our target users. The priorities of the interviewee are to consolidate information in order to write up general trends for their research.

Description

The interview lasted for around 20 minutes and delved into broad trends that my interviewee noticed when working with patients who had struggled with depression and anxiety.

Understanding User Needs

Based on this interview the top 3 helpful processes for young adults suffering from depression are the hit and miss results of therapy often to feelings of judgment, a need of extended time to process events that have triggered anxiety and or depression, and the helpfulness of distractions not to forget about events, but to provide a buffer time to process the events. Based on these insights, we hope to ensure that our application is able to provide a space for users to tune out from the world and process events they've experienced.

Interview #2

Background and Process

I interviewed the person at MLK. He had a really busy schedule, so I first thanked him for squeezing me into his schedule. I made sure to ask him if he was okay with me recording him. I had a list of prepared questions to ask him, but followed up with more questions as I saw fit. I also explained to him in detail what class this project was for and the goal that the app is trying to achieve.

The interviewee helped start 7 cups here at Berkeley, which is a website that allows people to anonymously talk to people who are trained to be "listeners". Every semester, the club recruits people to train through their model and provide support to any Berkeley student. He worked under an ASUC senator a year ago who had the idea to

bring 7 cups to Berkeley but was not able to finish the project. My interviewee then took it upon himself to complete the project.

Description

Overall, the interviewee was very helpful to our process of devising the product because he pointed out that the chatbot agent would not be a professional psychiatrist, so it's important about the advice that it gives to the user. This interview taught us to be cautious about the wording and tone of our chatbot agent.

Understanding User Needs

From my interview, I learned that depression should almost be treated as a physical injury. It is just as serious as an injury, but often times, people with depression underestimate the gravity of it. I also learned that our chatbot agent should be careful not to give out advice, but rather act as a listening agent and help the user realize how much control they should have over their situations. Lastly, my interviewee identified that having a diary to track the user's progress would be beneficial only if the user had set the schedule themselves - otherwise it may have the opposite effect of discouraging the user.

Interview #3

Background and Process

I began the interview process by isolating a quiet room specifically in my office. Before beginning the interview I made sure that the interviewee was relaxed and comfortable to take part in the entire exercise. I used pre-written questions that gave the capacity to gain the insights I wanted to gather from the given interview. At the same time, I collected information through onsite instant question creation. He was a busy person so I had to book him for an appointment so as to have an opportunity with him in my office.

The participant is a person who has been working on IT products that focus on the emotional attributes of an application's user experience. The individual impressed me with their knowledge and experience around the user experience of different portable devices. The participant had enough insights about user experience in various fields. The interviewee was able to give personal feedback about our application as well as summarized trends from their work on different user experiences.

Description

The interview gave several insight about the power of a user interface. First, communication is only successful if there is a connection between the communicators. Second, emotional stability is essential to cultivate a better user experience and an advanced communication attitude is necessary to offer a better connection between people. Finally, self-focus is an attribute that is essential in detailing with user interface experiences.

Understanding Users

What the user needs is an outlet to process their stressful situation. They need to be able to talk to someone about their thoughts and come to conclusions *on their own* about their problems. What the user also needs is an understanding of the seriousness of their depression. Most people will brush it off like it's no big deal, but it's imperative that our users realize that it's a mental health issue that needs to be resolved. Lastly, the user needs to be able to talk about their depression in a safe setting. In today's society, it's not deemed acceptable to talk about depression in a public setting, but the user needs to be able to talk about their mental health somewhere.

Interviewees Common Trends

All of our interviewees were able to provide insight based on having worked with the communities we targeted for a large amount of time. Two common trends from this work was a lack of understanding of the seriousness of depression and the necessity of processing it. Oftentimes people believe those suffering from depression can just snap out of it. In reality, those with depression need an extended period of time to process the event or events that caused them distress in the first place. As such the advice to "snap out of it" is not just unhelpful, but in fact counterproductive, since it attempts to speed up a process that is not meant to be quick. Our third interviewee had a large amount of experience working with the emotions users experience while working with different applications. Their experience focused on the importance of isolating one's emotions to help process them, both when dealing with mental health issues and when using a user interface.

Each of our interviewees brought a unique perspective on possible tools to aid those suffering from anxiety or depression that was based on the interviewees research experience. Interviewee one provided insights based on experience with college students working through depressive episodes and focused mostly on treatments that users stated had or had not worked. Our second interviewee discussed their experience

in training listeners for their application. The advice wrought from this interview focused on techniques to aid listeners for people working through depressive episodes. Finally, our third interviewee provided insight on the importance of our user interface treating depression seriously. They stipulated that serious treatment of issues was a precursor to listening and helping users.

Top 5 User Needs

1. Users need to talk about their depression

All interviewees cited the necessity of users to talk through events that are happening in their life that may be the cause of depressive episodes. As interviewee's two and three noted, when people talk about what they are facing they are more likely to come to their own solutions. It is this type of empowerment that can lead to increased confidence that may improve depressive moods. This is one of the reasons why we are including a chat bot in our application, so that users have an outlet to discuss their thought processes.

2. Listening is more important than advice

This user need arose in all three interviews. When people suffering from depression and anxiety talk about what they are facing, it is often not because they need a solution or don't have one, but rather it arises from a need to process life events. As such it is important that whoever, or whatever, is listening to someone rather than speaking.

3. The environment users share in must be non judgmental

Another common thread that popped up with interviewee's one and two. Oftentimes those suffering from depression don't like going to therapy or discussing their thoughts with people due to a fear of judgment. If a user is scared that they will be judged by someone they are less likely to open up and process their events.

4. Users need to have depression and mental illness treated as seriously as any physical injury

Interviewee's two and three stated how often times depression and mental illness is not taken as seriously as physical injuries. The societal bent towards not viewing the seriousness of mental illness contributes towards the sense of judgment that users can often feel when discussing mental illness. A supportive application that

discusses depression and mental illness seriously will ensure that the user knows they are being taken seriously.

5. Users need time to process events that have contributed to depressive moods

The theme of listening gave way to the idea of giving users a place and time to process events that are causing depression and anxiety. All three interviewees mentioned people needing extended periods of time to think through and work through traumatic events. For users, being in the present world can be a barrier to working through these events, and as such extended time away from everyday life can be helpful in providing a space to allow users to think through events.

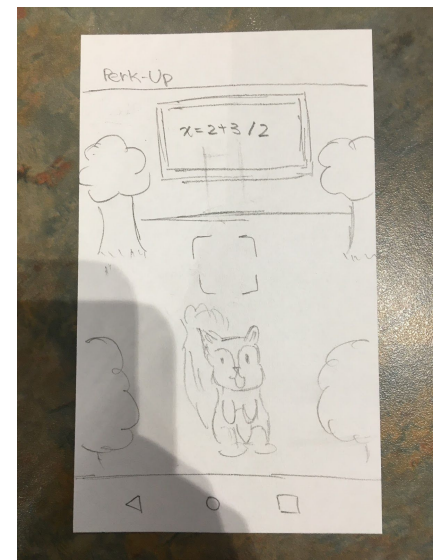
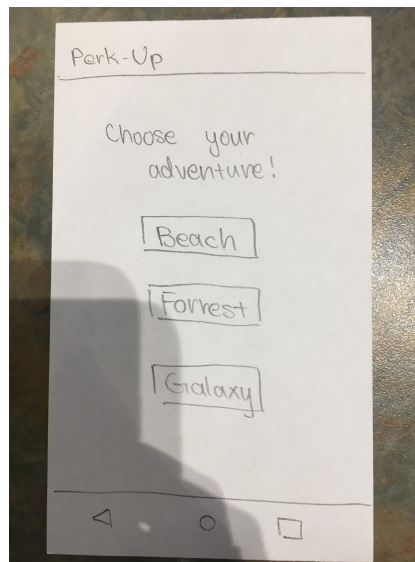
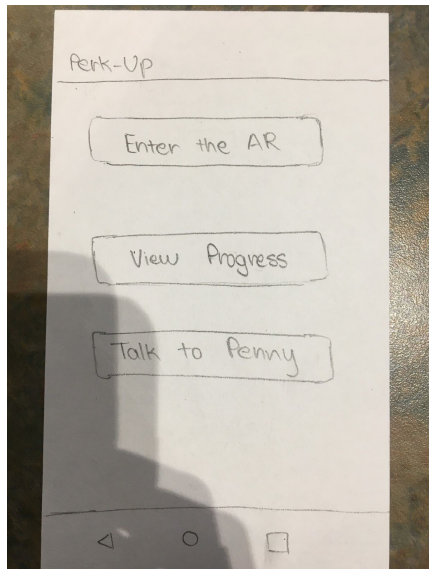
Initial Design

Based off of our initial user interviews, we wanted to target our 5 key takeaways by creating a safe space where users could talk about their depression, anxiety, or other mental health issues that they may be facing.

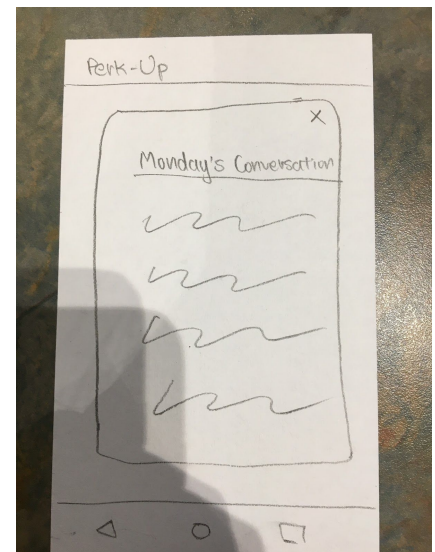
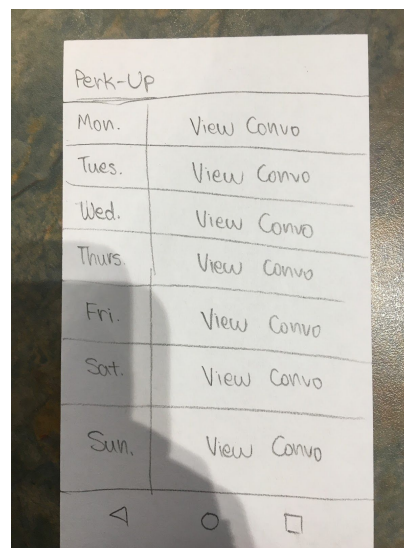
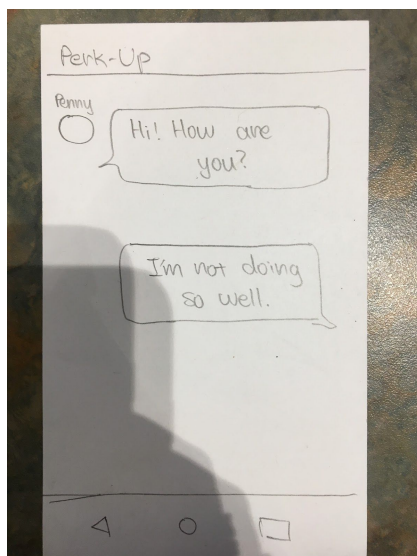
We addressed the need for users to talk about their feelings by providing an agent, Penny the squirrel, which the user could interact with. The agent would have its own personality and be set in an AR environment. The user could type in their thoughts and the agent would respond. The chatbot would be careful not to dictate advice, but rather promote user engagement to discuss their feelings. Additionally, by not having a person, and including a non judgmental agent, we will promote users' comfortability with our application that will hopefully lead to more engagement.

Moreover, the AR environment we provided would be set in relaxing spaces that would allow users to escape their real world environment. This would allow users a space in which they could process potential triggers that may be causing or enhancing their depression or mental health issues. Additionally, by saving users' response records in the journal portion of our application, users would be able to review the communication they've had regarding their emotions, hopefully ensuring a greater ability to understand the compartmentalization of their feelings. This would be paired with a journaling feature that would allow for self reflection.

Paper Prototype



From our initial screen our user can choose what type of adventure (location) they would like to visit. This provides agency for the user and transports them away from their current location. This idea arose out of feedback we received that people working through depression and anxiety often need to be apart from real life to help process events.



From either our home screen or our AR screen we can access the chatbot feature that allows us to talk with a chatbot to unburden our thoughts and feelings. Secondly, our responses and chats are stored in a journal, which we can view at our leisure. This allows a user to review their thoughts and emotions in the past.

Design Iterations

Iteration 1

Based off of our initial design document we were looking to have a combination of functions that would be meshed with material to help promote users suffering from depression to stay on track with their schedules. Our original features included a calendar that would allow users to schedule their life, a relaxation app that would include a white noise machine and would remind and guide users through meditation exercises throughout their day, a chatbot that would provide a listening ear 24/7 and finally a funny video player that would cultivate funny videos that a user could watch to provide a break and a burst of happiness to keep them on track with their schedules.

However, after talking to Professor Paulos and some of the TA's, we were struck that our application seemed only to be an amalgamation of different applications that already existed. As such it didn't provide much additional help for our targeted group of users, as they could find these functions in apps elsewhere.

To help ensure our application fit a niche and provided value beyond the actual application functionality, we decided to focus more on providing a world in which a user would be able to escape reality for a little bit. After conducting our initial user interviews, we doubled down on our use of a chatbot, making it a marquee feature, and decided to combine it with Augmented Reality.

Iteration 2

Using our paper mockups, we decided to go through one iteration of our application using one of our team members as a subject to identify issues with user flow. The user was first presented with the home page, which was just an introduction with a start button. Then the user is lead to a second page with three options: Enter the AR, chat with Penny, and view progress. The user clicked on "View Progress", expecting it to be empty as they are a new user. Then the user navigated back and decided to enter the AR. From there, he was presented with three different AR environments. He clicked on the beach setting, and was presented with the page of a simulated AR environment with Penny inside. He chatted with Penny for a bit, then navigated back to see his progress. Here are the issues we identified:

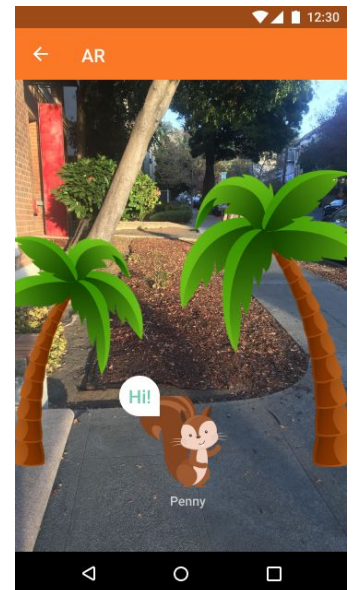
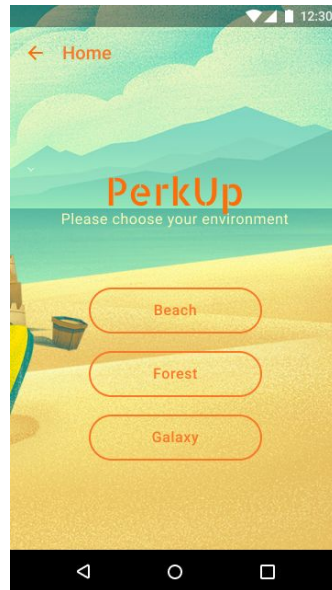
- Login ability needed, username needed and email needed
- Penny should be able to discuss with Penny upon clicking the AR

- What happens if Penny makes you feel worse
 - Progress is weird, what progress is it, you're just talking to someone, how are we rating this
 - Is the bot supposed to make you feel better? What's the purpose
 - Cognitive Behavior Therapy - makes you look at the process your mind goes through to stop negative moods; tracking your mood is one way to do it
 - Maybe have Penny's mood change along with the responses; i.e. asking different types of questions as responses change
- At the end, we decided that the home page was unnecessary, and that we can just show the user the menu page at the beginning.

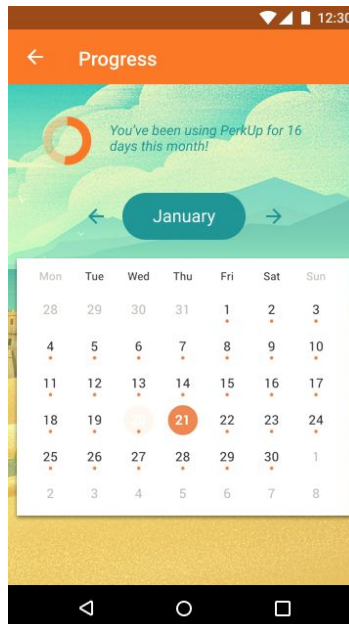
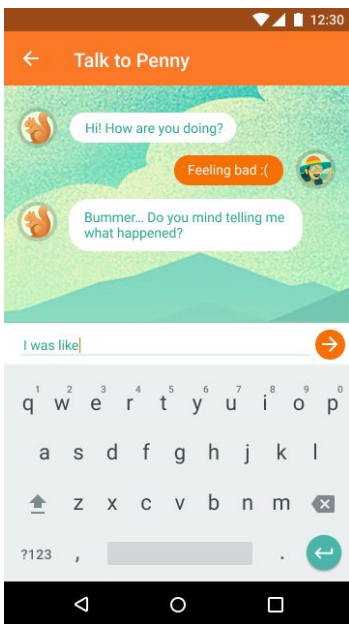
Based off of these observations we created a wireframe in Figma.

Initial Design Figma Wireframe

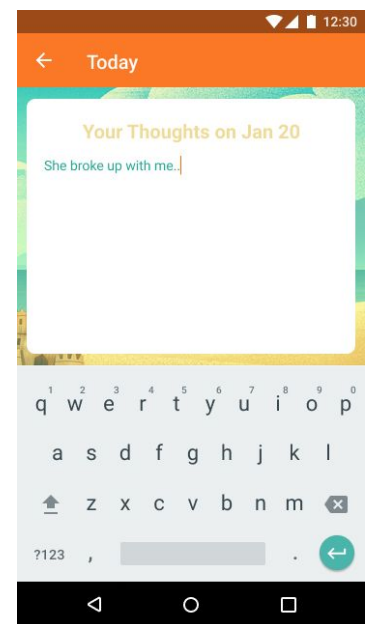
(Link to our Figma is in the Appendix)



Primary Task 1: AR to turn a users' surroundings into a different location



Primary Task 2: Chat with our chatbot



Primary Task 3: Store and review your previous chat logs with our chatbot

Initial Primary Tasks

Primary Task 1:

Use AR to turn a user's location into a different location.

One of our primary tasks is using Augmented Reality to provide a change in scenery for users. This would promote a safe environment in which users could better process the triggers in their life that may be causing depression or anxiety.

Primary Task 2:

Chat with our chatbot

By providing 24/7 listening ear to users we hope that users will unburden their thoughts with our chatbot. Sometimes there are some things you may not want to share with a real person, or someone may not be available to talk to. To cope with these needs, our chatbot would be able to ask probing questions to promote users to type out their thoughts, hopefully aiding in their ability to process their own feelings and emotions.

Primary Task 3:

Store and review previous chat logs with our chatbot

By being able to review previous chat logs, the user will be able to review their own emotional state and see how it changes. This can also allow for certain rewards to be metered out, providing an option to gamify our application and promote user interaction and happiness.

User Interviews

Interview #1

User Background

This is a recent Berkeley graduate who was introduced to us through one of our previous user interviews. During this student's time at Berkeley they faced periods of depression and anxiety that contributed to lowered academic performance.

Home Screen

While reviewing the home screen the user was confused between the difference of "Enter the AR" and "Talk to Penny" buttons, as they thought that the AR option would naturally lead to talking to the chatbot. Additionally they were unsure how the application was supposed to be used and suggested an introductory tutorial upon application startup. Finally they were unsure how their progress would be saved without a create account option.

Enter the AR

The user really liked the use of AR for this feature. They felt that the AR did enough to envelope the user in a different world.

View Progress

The user suggested that other progress measures might be more helpful than just tracking the number of days that someone has logged in. To further promote user engagement and happiness, as a reward for progression, users could be given a costume to dress Penny however they like. Including other types of rewards by gamifying more aspects of the application would be another way to promote user happiness.

Calendar Page

The user wished that the recordings for each day included Penny's responses and questions as well, and not just the user's responses. The user also recommended that an icon be adopted for calendar pages so that a user could tell on which days they had talked to Penny.

Talk to Penny

The user thought that a separate screen for users to chat with Penny took away from the point of our AR implementation. The point of AR is to surround the user in a certain world, and taking them out of that world to interact with our agent seemed counterproductive. Instead of a separate screen Penny's chat bubble could change to different questions. A user could respond via pop up keyboard, but wouldn't have to see what they typed right away. They could view their entire conversation in the journal function.

Overall Thoughts

Liked the idea, was curious on how we were going to build Penny's responses. Enjoyed the theme and colors of the application.

Interview #2:

Background

For my user test, my roommate's cousin becomes my interviewee. Since she is a talkative and outgoing person, she totally understand the idea of think-loud. The user promises that she would immediately speak out every thought appear in her mind.

First of all, I asked her when she felt any depressed or stress and where the stress comes from. She told me that she feels anxious everyday because she is still unemployed after she graduated from UCB in 2017. She is a young woman who dresses stylish. Even though hunting job becomes the main activity of her life, it is still difficult to get a satisfied job as an international student. Moreover, the pressure from family is another reason that makes her feel depressed. She is the only child who still need the financial support from her family.

Then I asked her how would she do for relieving from pressures. The user told me that she talks to her boyfriend every night about her daily life and the

communication helps her relief from stress for the moment. "He is a such a gentleman." She said that with a smile. Except this, browsing the facebook and twitter is another option for her to release the pressure. The memes and funny videos are her favorite. She said, "the internet is the cheapest way to chill."

Homepage

When i showed her the Home Page, the user was surprised to see there is actually an app for releasing stress. She immediately asked me to show her How to use it. I said that I cannot tell her the way to use because we need her direct reaction about every function. "Okay, I gonna explore it by myself", she said.

When we at the homepage, she was excited to press "Enter the AR" since she is a huge fan of Pokemon Go. Also, she mentioned that she really like the background because the the warm color makes her felt relaxing.

Choosing Environment Page

On the stage of choosing the environment, she clicked the "beach" option. Then I played "summer vibe" which is a chill song for her.

AR Chatting Page

At same time, the user found Penny is stand at the center of screen and said "hi" to her. Then she said "how are you, Penny". "I am good, Naomi" I tried to respond to her as Penny would do. "I love this" was her first expression about exploring the scenario of Beach. "But how do you know my name?" It inspires me that we might gather the user's information before allowing her talk with Penny. Then I introduced to her that she could chat with Penny in any augmented reality environment. "Sounds great," The user said.

View the Progress Page and Calendar Page

She double clicked go-back arrow to homepage in order to explore more features. Then she clicked the "view the progress". "What's this?" She asked herself and I noticed that she frowned when she saw what was in the View Process. She browsing all the information the screen displayed and said "Okay, I got it. It marks the date that I have talked with Penny." She chose to click Go Back since she believe that the calendar just a simple and meaningless function. She didn't even try to click anything.

Talk to Penny Page

Finally she clicked the chat with Penny, then I showed her the typing page. She told me that it is really user-friendly because texting could be a convenient way to release stress when she was in bed at night.

Summary

The user gave some useful and intuitive suggestions. Firstly, she said the AR function is pretty cool and the music is chill. Secondly, she mentioned that she didn't understand why there should be a calendar as a primary function. Thirdly, she suggested that "Enter the AR" and "Talk to Penny" should be next to each other since those have similar function. However, she told me that she would definitely install this application if the application is available.

Pokemon Go

We found an academic paper from the University of British Columbia titled "Who's Gotta Catch 'Em All?: Individual differences in Pokèmon Go gameplay behaviors" (Khalis, Mikami) that suggested Pokemon Go could help people who struggle socially by encouraging them to leave the house and have social interaction. They found that leaving the house actually eased users' symptoms of depression. Inspired by this study, we decided to redesign our app. Our new application's design would focus on pushing users to interact with the world by only providing AR gifts when a user would arrive at a determined location. However, we would focus only on locations such as cafes, restaurants, or movie theaters that would provide opportunities for our user to socially interact with others (ordering a coffee, for instance).

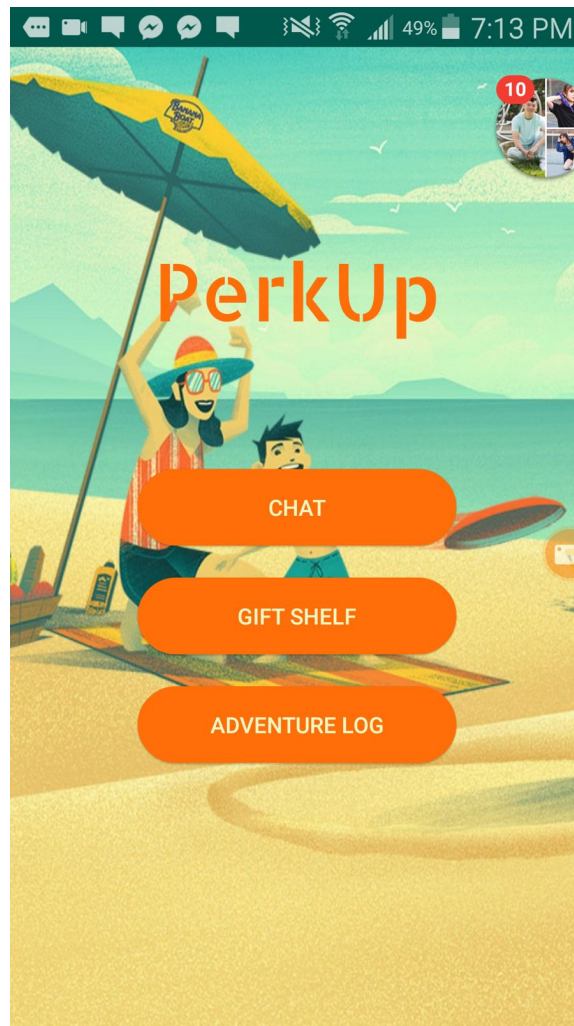
Khalis, and Mikami. "Who's Gotta Catch 'Em All?: Individual Differences in Pokèmon Go Gameplay Behaviors." *NeuroImage*, Academic Press, 1 Dec. 2017, www.sciencedirect.com/science/article/pii/S0191886917307067#bi0005.

Final Design

Our final design looked to incorporate some of our original elements packaged with a gamified element similar to that of Pokemon Go.

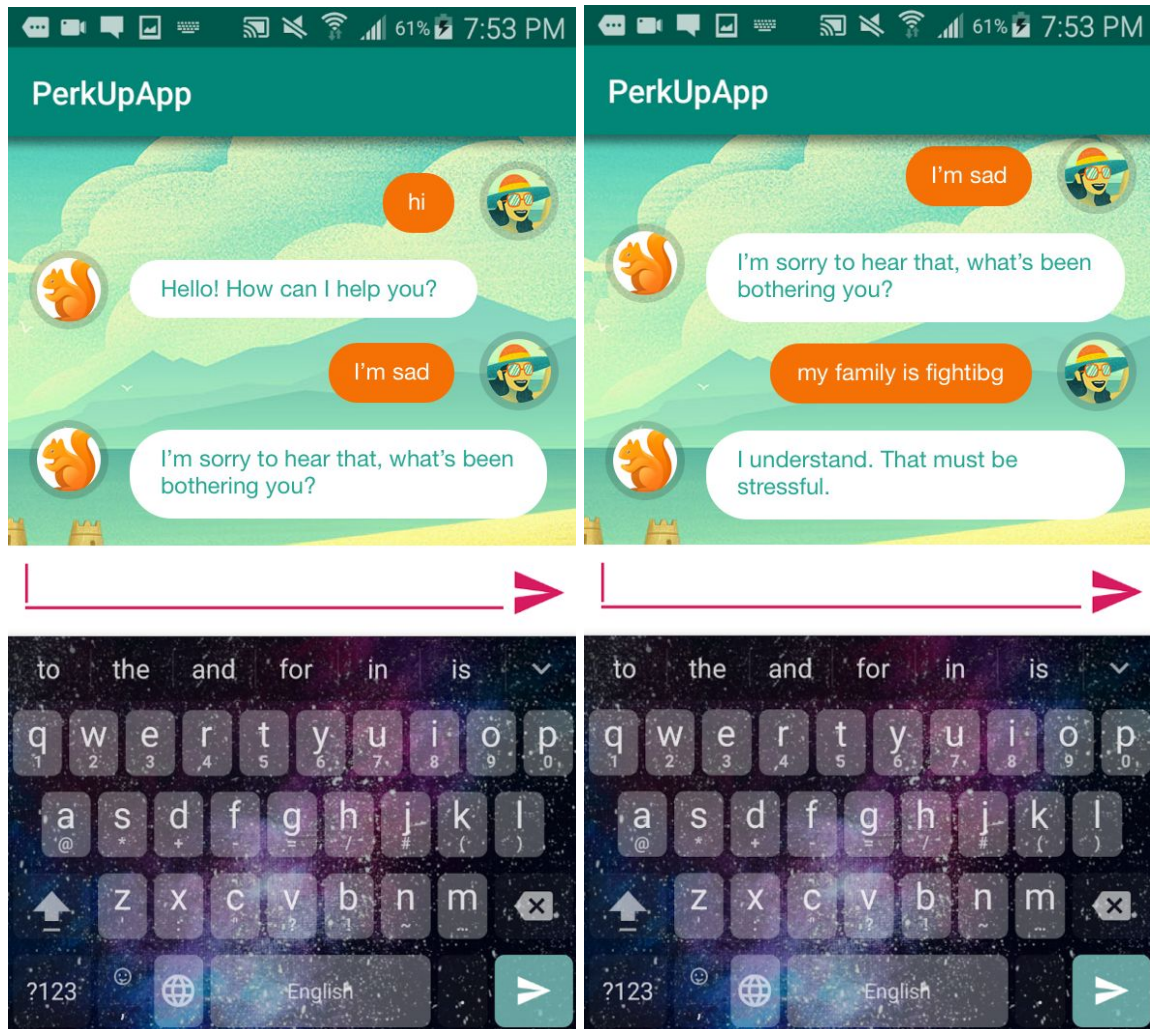
Opening Screen

Three button options when the app is opened: Chat, Gift Shelf, and Adventure Log.



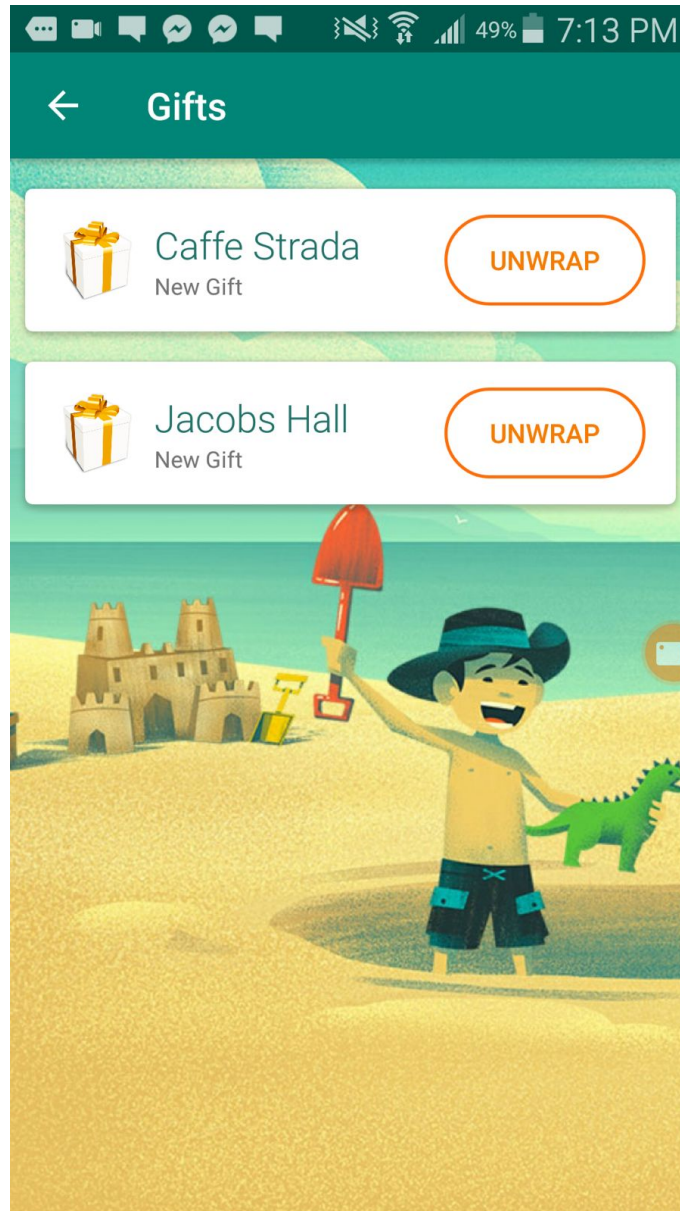
Talk to Penny Screen(s) and Message Interaction

A chatbot feature where you can talk to Penny and get helpful input about certain questions that trouble people with depression and anxiety. You can type any message and Penny will reply. Our chatbot is built off of Google's Dialogue Flow which uses AI and Machine Learning to provide non hardcoded expressions. A user can type "lets go on an adventure" to have Penny provide a location that a user can go to.



Gift Shelf Screen

Our Gift Shelf stores gifts that you can open when going out with friends to locations nearby that will help encourage social behaviors. Gifts are given after telling Penny to go on an adventure. Hitting unwrap will check your location and, if you're at the correct location, will open up the AR camera feature to accompany you at your event.



Enter The AR Screen

When a user has reached their location they can open their gift which opens an AR figure. The AR gift that shows up when a dollar bill is placed (used as an initial target map). We used an initial 3D model of a cat and plan on making additional 3D models that provide some user interaction.



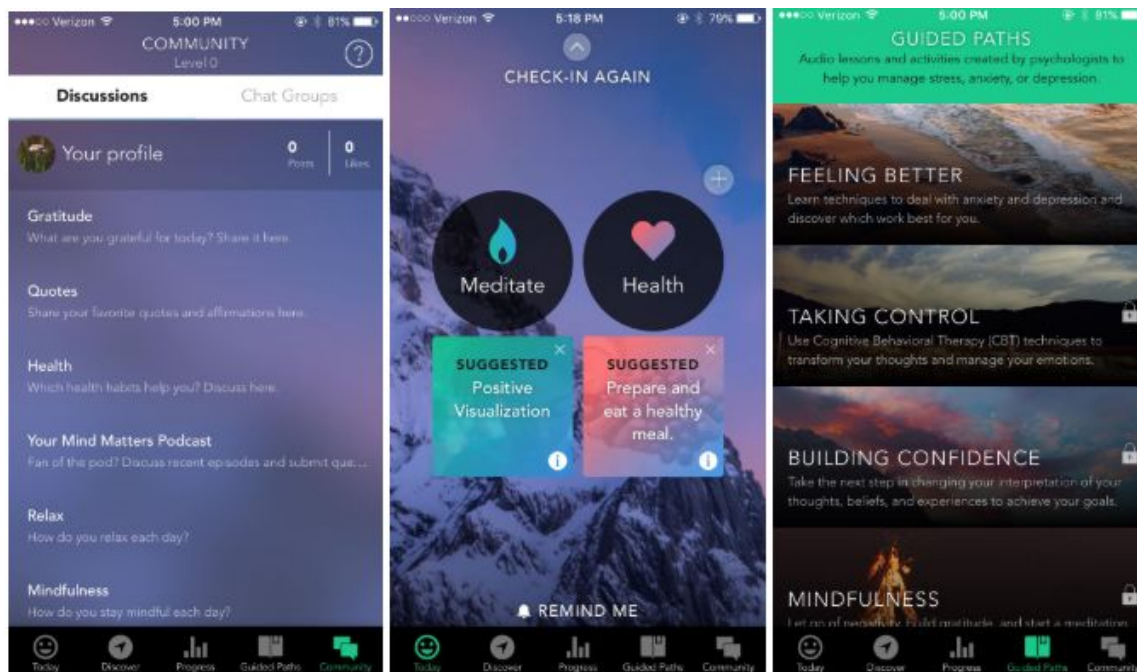
Competitive Analysis

Application #1: Pacifica

Description:

Pacifica is an app designed for helping those with stress, anxiety, and depression through features that employ techniques of cognitive behavioral therapy (CBT) as well as meditation. It has uplifting images, articles about mental health and helping work on it, your mood progress over time (CBT), videos made by psychologists to help manage with mental health problems, and a community to talk to people and share positive things about your lives.

Screenshots:



How our application is unique:

Pacifica has a lot of features that we originally aimed to have in our app including meditation, happy/helpful images and videos, and a way for someone to talk to someone. Pacifista focuses on quotes, twitter posts, and other happy things to display in their images and their videos focus on psychological help. However, our application

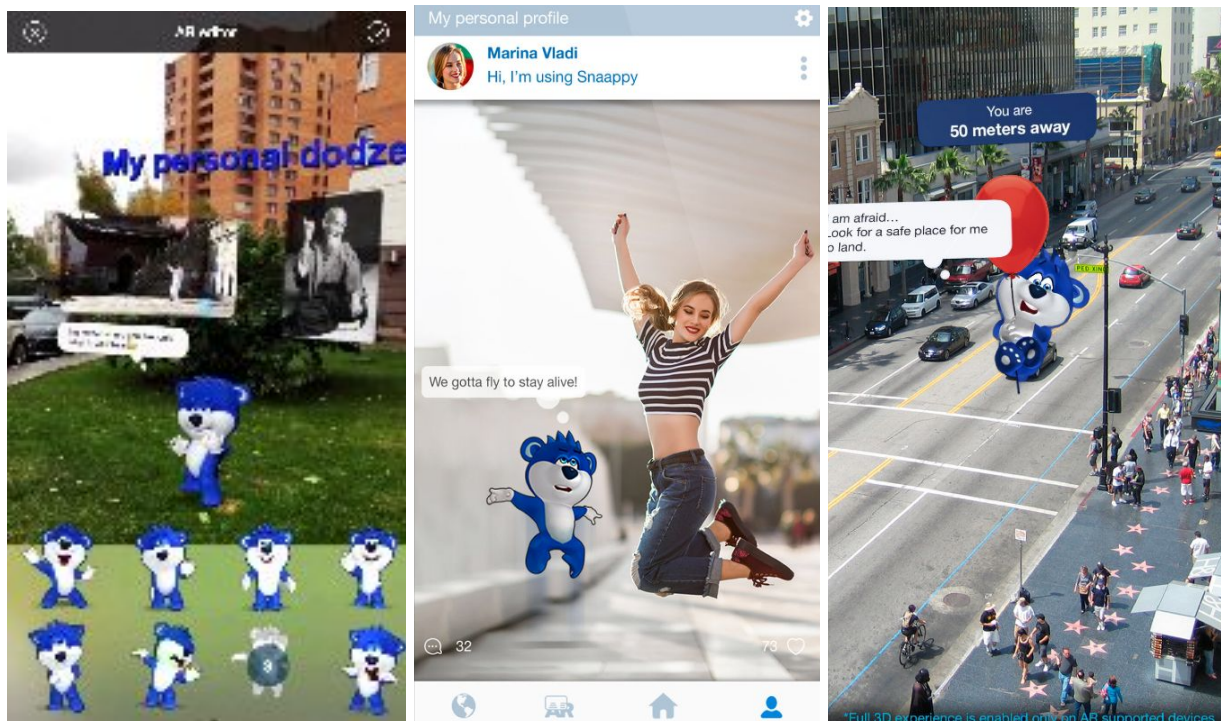
looks to combat symptoms of depression by encouraging users to go into the real world via our Augmented Reality gifts. We don't have anything about moods or keeping track of them as that's what CBT is about. Instead, our adventure log is meant to allow a user to unofficially record their thoughts. Finally, Pacifica's chatting and interaction feature is focused on the community of users while our application provides a non judgmental space to air one's thoughts with our chatbot.

Application #2: Snappy

Description

An Augmented Reality application that utilizes an anime to help users chat and share feelings and ideas, discover the city, and play in AR. The app also allows users to edit AR scenes and share their scenes with friends, for example adding messages, photos, and facial expressions to the scene. The 3D animated character then will "talk" to your friend in their environment.

Screenshots:



How our application is unique:

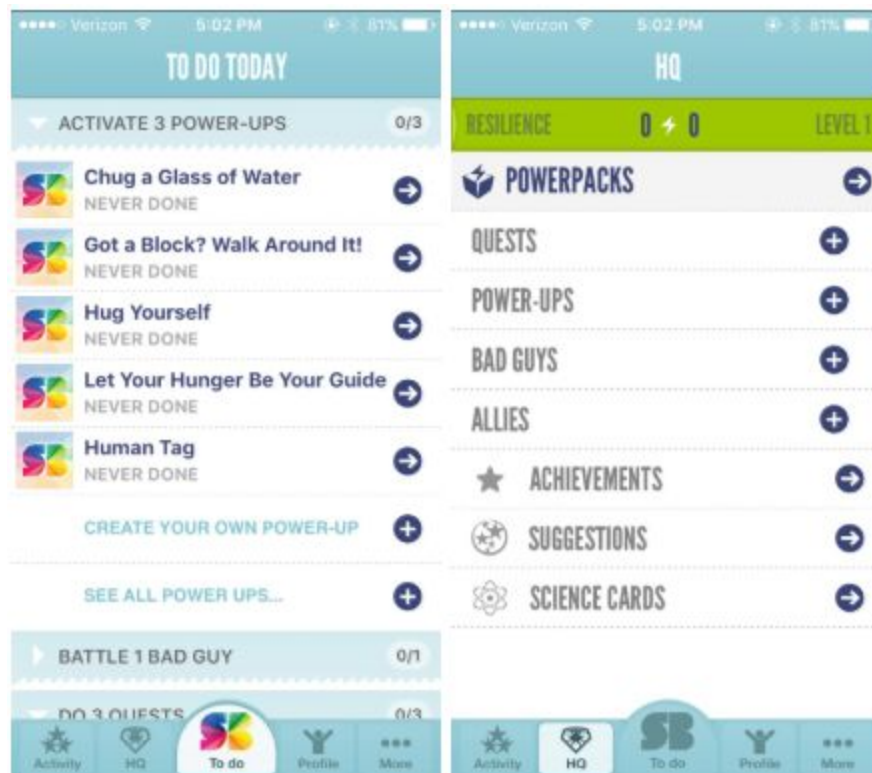
Our application does not look to use Augmented Reality as a part of every interaction, but rather uses it to provide a small incentive to reach a certain location. Additionally we are focused on having our chatbot talk with users, while Snappy looks to have Augmented Reality shared between different users.

Application #3: SuperBetter

Description:

SuperBetter is designed for helping reduce symptoms of anxiety and depression through gamifying activities, goals, and other healthy habits. It gives healthy daily challenges like walking around outside, talking to people, etc. These challenges give experience and power-ups that level up your account and allow you to unlock much more “deep” videos and other challenges that help develop you and your account.

Screenshots:



How our application is unique:

SuperBetter is a bit more shallow in terms of help for those suffering from mental health problems. It gamifies activities that help people feel better about themselves, but doesn't really seem to have much of a system that keeps track of all of this or explain it at a high level. Additionally, SuperBetter does not verify that a user has completed a challenge, allowing a user to artificially complete challenges. Our app is focused on one activity, going outside, which is verified via the phone's location. Furthermore, we include a space for users to share their feelings (chatbot) and to reflect on their thoughts (adventure log). SuperBetter focus on general well being tasks while our application focuses on helping users work through emotional struggles.

Application #4: Pokemon Go

Description:

The hit AR game that spurred widespread adoption of Augmented Reality, Pokemon Go is a game that allows users to walk around collecting pokemon. The application includes incentives for doing physical exercise but unlike our app is not focused on mental health.



How our Application is Unique

Our application includes the game element of Pokémon Go but with a chatbot that can help people work through their depression, focuses on helping people work through their mental health. Moreover, our application is not as focused on the AR as a game, but rather as a small reward to incentivize people to go outside and socialize with the world. Finally our adventure log allows users to include general notes about their experiences, something that Pokémon Go does not have.

Technical Challenges

The hardest part of the project was getting the Augmented Reality to work. While the implementation wasn't necessarily extremely difficult, none of us had previous experience with AR and it took a while to choose the best platform to work in (we ended up using Vuforia over AR core and implementing our 3D model in Unity), setting up the target map, converting the Unity project into an Android module and then importing that module into our application. We also had to fix the error "Vuforia cannot be started before it is initialized" by integrating a VuforiaWrapper and we added our own script to make the back button work.

The next part that was more challenging than expected was the chatbot. We decided to use Google's software Dialogflow. It uses Google AI and Machine Learning algorithms in the back end to teach a bot to respond accordingly based on intents. Intents use training phrases for what a user might say and allows specific responses to certain situations. The most challenging part was mapping out the entire logic flow and accounting for all user response possibilities. Our original logic flow was mapped out to be four pages long but was deemed too complicated, and we ultimately had to reduce the complexity of the logic.

Summary

By combining what our competitor applications do into a single application and having a clear focus on mental health, we were able to put together a final application that has a lot of potential to improve the mental health of young adults going through depression. Our final design demonstrates our incorporation of feedback we received from the teaching staff and from our user interviews. The value that the users will receive from our application is a daily increase in social interaction and an alleviation of their symptoms of depression. In the future, we hope to improve on our AR feature by allowing the user to have more interactions with AR gifts and extending the geographical range of our application. Furthermore, one of our visitors at the demo showcase even suggested that we could alter this app to help people who recently moved to a new location and want to familiarize themselves with the region.

Youtube Video Link

<https://www.youtube.com/watch?v=EogSAKCb0Ac>

Github Link To Project:

<https://github.com/cs160-berkeley/finalproject-fa18-group3-fa18>

Appendix

([Link to our Figma](#))

Sample Interview Questions

- How long ago have you been working through your mental health struggle?
- Were there any moments that seemed to make your depression go away?
- What did you find most helpful?
- What did you find least helpful?
- What was one thing you wish you knew when you were (or when you began to) deal with depression?
- Are there any applications you used (or currently use) to help manage your mental health?
- What was the biggest change you've noticed from working through mental health?
- You have a magic wand and you can design a tool to help people work through their depression, what tool do you make?
- What are the top 3 things that people get wrong about depression?
- Would you prefer talking to an actual person or an AI chatbot about your feelings?
- Do you think campus resources for depression are easily accessible?
- How often did you talk to friends during your battle with mental health?

Initial Interview Transcripts

Interviewee 1 (Alex)

Audio available upon request.

Interview Process

Set aside a quiet location (office) where the two of us could talk. I began by asking some questions about the interviewees background and thanking them for coming. I then drew on a list of pre written questions which led to natural conversation and several questions I would come up with on the spot. The questions were focused on trends that my interviewee noticed in their work with people suffering and working through anxiety and depression.

Background

This interviewee has worked in a lab that studied the effect of age on mental health in an attempt to answer the question whether people of a certain age are more likely to be depressed. This interviewee had interviewed over 17 individuals who had suffered from depression and anxiety. The interviewee was able to provide a broad brushed notion of certain traits that our target user group would likely have and experience.

While the interviewee themselves has not suffered from depression or anxiety, they were able to provide a third person perspective that consolidated the interview results in a concise description of our target users. The priorities of the interviewee are to consolidate information in order to write up general trends for their research.

Interview Description

The interview lasted for around 20 minutes and delved into broad trends that my interviewee noticed when working with patients who had struggled with depression and anxiety.

Top 3 User Needs for this Interview

Based on this interview the top 3 helpful processes for young adults suffering from depression are the hit and miss results of therapy often to feelings of judgment, a need of extended time to process events that have triggered anxiety and or depression, and the helpfulness of distractions not to forget about events, but to provide a buffer time to process the events. Based on these insights, we hope to ensure that our application is able to provide a space for users to tune out from the world and process events they've experienced.

Ask a few questions to get to know their background.

When I joined my lab Spring semester; misconception of mental health being an edge thing. Longitudinal health study.

How many participants have you interviewed?

17; multiple interviews with individuals

What types of questions did you ask as a research assistant?

Their experience with mental health, what was a point in their life that they realized it was a recurring problem. What type of treatment they've tried to get? What their triggers are, what has helped, what hasn't helped.

What were some trends that you saw that caused the issue?

Build up of self esteem. Humiliated in public setting was the last straw. Mostly people with depression. Final step was when something happened in a public setting that caused in a breakdown.

What do you mean by public setting?

Self esteem issues, body image issues, they were in high school when the event happened. Close friend eventually revealed a lot of things to the entire school.

What were some treatments that your interviewees sought out?

Obvious ways is to get counseling or therapy. Matter of being able to talk out their issues, externalizing their struggle. Everyone that therapy helped in spurts; like right after and they would be okay for a while. They would be a low before the next session. Stagnant at the low, in anticipation of the session it went up. They would map out their emotions

What were some other helpful treatments that interviewees sought out?

Channeling their inner feelings towards art. Redirecting their energy. Marijuana and meditation retreats seemed to help. Looking for locations to progress. People looking for an outlet, getting them to disconnect from their problems, using that time to process what happened in the past, needing a disconnect to get through to the next day. They couldn't process in real time.

Were there any treatments that didn't work?

Therapy didn't work for some, they felt judged. They felt that their therapist invalidated. Thought that therapists couldn't relate to their experiences. Chat bot may help because the bot won't judge them. They liked talking out their problems, just a person they didn't really help in the sense that they were told they were. Meds were said not to work.

Top 3 things you learned by doing these interviews.

Not a certain age group that deal with depression. Study looked at all age groups. Misconception that you're depressed during a certain number of years in your life.

You're not always sad when you are depressed, just a constant state of not wanting to function. They would have extended spells of not wanting to go out, not because they were upset, but because they didn't want to go out. The spells were so hard on them that it took their energy out from them after they got through the episode.

What are things people get wrong about depression?

Why do people think they are invalidated. Lots of people think that depression is just suicidal or leads to an inability to be happy. Some people think you can snap out of it, which isn't always true.

What are some applications interviewees used?

Eliza (chat bot, one of the first chat bots) created by MIT

Running tests on their use of Eliza, not sure the outcome. Meditation and sleep better apps were also helpful, such as luminosity. If their mind is focused on other things their mind doesn't get sucked back into a certain zone. Brain attention apps were very helpful because they kept the mind off of the inaction zone.

Have you noticed any change in yourself?

More sensitive, you can never tell what someone's triggers are. Some of my coworkers have made me realize this as well.

You have a magic wand to create anything you want to help people working through depression and/or anxiety, what would you design?

A teleportation device that would allow people to 3D print a world. They need an ability to transport to a world to process the past. Escape the now to process the past, but also customizable to their own needs.

Do you think resources are accessible to people suffering from depression and anxiety?

The resources are accessible but aren't always the most helpful.

You are designing a mobile application, what would you design?

Gamifying would be very helpful. Its wanting a response that you know isn't going to judge you. You need validation when you say something. A chat bot would allow them to have this interaction without the need to judge. A distraction task that keeps their mind

occupied is good. Having the capacity to create white noise and zone out, create a space to zone out anywhere and go into your own world.

Interviewee 2 (Vicky)

Interview Process

I interviewed the person at MLK. He had a really busy schedule, so I first thanked him for squeezing me into his schedule. I made sure to ask him if he was okay with me recording him. I had a list of prepared questions to ask him, but followed up with more questions as I saw fit. I also explained to him in detail what class this project was for and the goal that the app is trying to achieve.

Background

The interviewee helped start 7 cups here at Berkeley, which is a website that allows people to anonymously talk to people who are trained to be “listeners”. Every semester, the club recruits people to train through their model and provide support to any Berkeley student. He worked under an ASUC senator a year ago who had the idea to bring 7 cups to Berkeley but was not able to finish the project. My interviewee then took it upon himself to complete the project.

Could you tell me more about the club you helped to start?

The club is called 7 Cups Berkeley, and it’s a chapter of an international organization called 7 cups of tea. It offers free anonymous peer counseling from anyone, for anyone. Everyone has an anonymous profile, and we adopted our model from MIT. Basically a user can log in, find a peer counselor (which is another Berkeley student), and talk for an hour.

How do you train people to become listeners?

Every semester, we recruit listeners, and they go through a 3-4 week training period. It’s called the Regarian model, I can send you our training model later if you want.

What motivated you to help start the club?

I interned under a ASUC senator during his term. He wanted to bring it on campus, but couldn’t finish the project before he graduated. So then I completed it during my semester.

How would someone go about helping people with depression?

Because we're not professionally trained, we don't give them solutions. We help them understand their role in a situation and lead them to a solution. We help them talk through their feelings and why they might be feeling that way. We're there as a listening agent, and we need to be empathetic.

I described the app that we're creating and asked for his thoughts.

I think it's a really unique idea, but I would tread with caution on how you're delivering this agent. Make sure that it's actually serving the purpose you want.

What are some things you shouldn't say to people with depression?

Because we're not professionals, we are trained to not directly give them advice. For example, if a person is having trouble with a family member, we never advise them to go talk to them. Instead, we help them realize their feelings and what they have control over. We never ask why, because it might come off as accusatory. We're also very aware of our tone and we're careful to not make any assumptions.

We're thinking of adding a feature that tracks the user's progress, would that put too much pressure on them?

I don't think so, if the user was able to set their own schedule. But also, be careful if they miss a deadline. Your chatbot agent should have a positive spin to it. If they miss a deadline, instead of reprimanding them, try reminding them of the progress they have accomplished so far.

What is a common misconception that people have about depression?

People think it's not a serious issue, or that it's the depressed person's fault. When in reality, it should be treated like any other serious injury or illness. This makes it difficult for people to talk about depression in a social setting.

Why are people with depression not likely to go seek help?

Often they believe that they can deal with depression on their own. They believe that it's not as serious as a physical injury. Also, if they start going to seek help, they fear they might be judged by their friends and family.

For the app, what calming settings/environment would be most helpful?

It would be most helpful to have a variety of different settings, as everyone is different. A calming setting like a forest or a beach would help.

For the app, should the character be an animal or human?

I'm not sure about that.

Interviewee 3 (Duo)

I began the interview process by isolating a quiet room specifically in my office. Before beginning the interview I made sure that the interviewee was relaxed and comfortable to take part in the entire exercise. I used pre-written questions that gave the capacity to gain the insights I wanted to gather from the given interview. At the same time, I collected information through onsite instant question creation. He was a busy person so I had to book him for an appointment so as to have an opportunity with him in my office.

Background

A participant is a person who has been interacting with IT products with major focus on the emotional attributes of user experience. To my admiration, the individual has adequate knowledge and experience about the electronic devices an aspect that gave the assurance of getting the given sorts of information. The participant had enough insights about user experience in various fields. Though the client was able to give primary information about the interview, they were also able to reveal third person content.

What was your experience using emotions evaluation tools?

It is a way that gives an individual the power to contain any negative implications of anxiety, guilt, and any other unwanted fallacies. The outcomes help in managing what comes out of the acts that individuals may act in the given areas of interest. The end product of the evaluations gives an individual power to respond to personal emotional issues.

For how long have you been an active evaluator of emotional stability in this field?

Over five years I have been able to manage my emotional factors that may hinder one from attaining personal goals. For a period of over seven years, I have attained enough insights about user interface and the associated processes in life.

Why should a vendor insist on emotional stability and guilty management?

The two elements form the baseline of life in the specific areas of indulgence in the given lines of attribution. When successful plans of association are all connected to the way processes are monitored it is possible to know the exact array of processes in the

quilt reduction and personal life attributes management. Emotional response defines the nature of the vendor and how they are able to align with the prevailing environment.

Why it is necessary to attain individual attributes management goals all the time in personal life amplification?

The best way to deal with emotional responses is through diversification of all concepts that create open ideas in life. Personal attributes give one the ability to counter any negativity that may arise with emotional failures in life. It becomes easy to respond to challenges that connect a user to the emotional concepts of living. All goal that one may have in life should be aligned with emotional concepts to ensure there is no break line in communication always.

What is the reward of periodic user interface management in the communication?

The user is able to divert any unusual connection and concentrate on the power to sustainably communicate. Periodic user interface management assures one's ability to cope with any negative implications of communication breakages.

What I learned from the interview

- The interview gave several insight about the power of user interface
- Communication is successful if there is a connection between the communicators
- Emotional stability is an attribute to cultivate for better usability experience
- Advanced communication attitude is necessary to offer a better connection between people
- Self-focus is an attribute that is essential in detailing user interface experience

User Interviews

Notes from User Interview 1

Clicked on the Home Screen:

Difference between enter the AR and talk to penny, don't know what penny is or who penny is. Tutorial screen could be helpful. Not sure what Penny is

Clicked on View progress:

Questioned why there was no login or account creation

Clicked on Enter the AR - Thought that you have to be at the location instead of where you are actually at (cleared up after clicking on it). Didn't click on penny

Clicked on View Progress:

Understood how often we've been tracking users activity. Had an idea: reward users who use the app more often, perhaps by unlocking costumes for our mascot. On the screen the user commented on how to maximize user happiness, include rewards (gameify) in more places of the app. This customization for the user and feedback that the user is doing something right, no point in just saying how often you used the app, doesn't really show how the user is getting better, did they get anything out of it, is there another way to track how someone gets better. The user commented that the current progress seems to be spitting out facts, not actually progress.

Thoughts Page on calendar page:

The user mentioned that they understood that it tracked what a user talked to Penny on that day about. The user was confused on why we didn't log penny's responses in addition to the user's thoughts. A format could be a type of Q and A. Make sure if Penny is giving advice, that it is recorded that so that a user can look back at it. For days used mark the date with a note icon to record that there is something for that day as a record

Talk To Penny:

Chat in a separate scene defeats the purpose of the augmented reality. The user felt jilted when trying to talk to Penny, as the user was removed from the AR feature. Update the speech bubble for penny to have questions. Allow users to type responses, but no need to record the responses in the screen. Penny's responses pop up in the chat bubble. Chatting with penny on a side screen defeats the purpose of AR

Overall Thoughts

Likes the idea, curious how you are going to build penny's responses. i.e. how do I deal with a breakup vs how do I deal with a divorce. Thinks that questions prompting is a good idea. Liked the theme of it, felt happy with it. Liked the bright vibrant colors

Notes from User Interview #2:

Critical Incident Log

- Homepage: -> "it's cool!" at the color of background.
- Choosing the environment -> "love this song!" the user
- AR chatting page -> "Wow! So cute" the user said and smiled
- View the Progress Page -> "What's this?" the user asked and frowned

- Talk to Penny Page -> "Smart!" at the typing interface

Summary

The user gave some useful and intuitive suggestions. Firstly, she said the AR function is pretty cool and the music is chill. Secondly, she mentioned that she didn't understand why there should be a calendar as a primary function. Thirdly, she suggested that "Enter the AR" and "Talk to Penny" should be next to each other since those have similar function. However, she told me that she would definitely install this application if the application is available.