Smirk It: Goal Setting Through Augmented Reality

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Abstract: This paper attempts to list one possible healing solution for those that suffer from a lack of happiness. We will be making an assumption that goal setting and working through goals will help those people by creating opportunities for happiness. Through an AR game application, we hope to reinforce good habits and hopefully inspire them to continue those tasks in regular day life.

Keywords: augmented reality, psychology, happiness

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INTRODUCTION

Throughout the years, interaction technologies such as augmented reality and virtual reality have gained popularity. Through Dr. Zhen Bai's AR/VR Interaction Design class in Fall 2019, we were given an opportunity to create something that addresses real-world problems utilizing the 3D space provided by AR/VR technologies.

We took this opportunity to help and impact the people around us suffering from one of the most prevalent mental illness in the world. We researched and empathized with people suffering from the illness and designed a fun solution to combat the illness using augmented reality. We hope that through this solution, we will be able to inspire people suffering from the illness that they are able to stand up on their own and find their self-worth without reliance on drugs or another person.

The National Institute of Mental Health states that "Depression (major depressive disorder or clinical depression) is a common but serious mood disorder. It causes severe symptoms that affect how you feel, think, and handle daily activities, such as sleeping, eating, or working." Many people suffer from depression; Among the estimated 9.3 million adults who reported having suicidal thoughts in the past year, college-age young adults (ages 18 to 25) had the highest percentage of serious thoughts about suicide (7.4 percent).

Re-defining the Problem

According to ADAA (Anxiety and Depression Association of America), some of the symptoms of depression include:

- Feelings: hopelessness, pessimism, guilt, worthless-ness, helplessness

- Persistent sad, anxious or "empty" mood, Loss of interest or pleasure in hobbies and activities

- Restlessness, irritability, decreased energy, fatigue Difficulty concentrating, remembering, making decisions

- Insomnia, early-morning awakening, or oversleeping

- physiological pain without biological reason

- Thoughts of death or suicide, suicide attempts

Analyzing the physical symptoms of depression, the core of the symptoms pointed to the neurotransmitter dopamine, released by the reward centers within the brain. Dopamine is known as the feel-good neurotransmitter, it contributes to feelings of pleasure and satisfaction as part of the reward system. This important neurochemical boosts mood, motivation, attention, and helps regulate movement, learning, and emotional responses.

Depression can be re-iterated as a symptom of different balance of neurochemicals including dopamine. Although the known effect of dopamine release can be observed, the pattern behind the release is more complex as we are not able to predict the exact triggers of the brain's reward center. There are many different thorough research to help figure out and understand the intricacies of the balancing neurochemicals and the effects of it.

PROPOSED SOLUTION

Understanding that depression is a symptom of unbalanced neurochemicals –perhaps not unbalanced as it could be a normal human behavior, but a significant disadvantage nonetheless in the product focused world– out solution was to mimic activities that could incite the release of the neurochemicals.

Goal Setting

One way to mimic dopamine was through goal setting. When we accomplish something our brain releases dopamine into our bloodstream letting us enjoy the moment. This gives us a sense of achievement. This feeling is quite addictive; Imagine, eating the rush you get when you eat the food you have been craving. To fulfill a desire, you accomplished a task and in return the brain released dopamine letting you enjoy your food. This "high" is what people chase after; when we achieve something, the natural reaction is to do the next thing to get that feeling of high again. Using this loop, we will help users feel a sense of accomplishment, so that when they achieve it, they will crave for the next accomplishment.

Problem Solution Goal

Our main goal for our product is to help users feel happy. There are other auxiliary goals that we must fulfill in order for our main goal to be received.

- The application needs to be engaging

- The application needs to be accessible easily

- The user

goal: easy, social and engaging. helps users understand how to get up by themselves

DESIGN THINKING EMPATHIZING

Personally, culturally, and recently, depression has been a rising in prevalence for a long time. Being college students and an adult, it is affecting more people around us. So what can we do to combat this mental illness to help others and ourselves?

Defining

Understanding which problem to solve was one of our biggest mountains. Current treatments for depression is talking therapy and medication. We knew what we could provide was not a formal cure but anything that could help people with depression. Throughout the last 5 weeks we interviewed people with depression, read formal papers, and empathized with ourselves and people on the internet to define our solution.

Ideating

We had many different ideas and each a different goal.

SYSTEM DESIGN STORY BOARD

To understand how the user would potentially interact with the app, we created a story board. Default user flow when using the app:

1. The user opens up the app and scans for the surface. After identifying white dots, tap on the screen to place the menu

2. When the menu is placed: the Truth card and Dare card will pop up.

3. Then the user taps on a card and the card will flip to show a prompt.

4. User will be able to tap on the card after they are done.

Some other scenarios that the user could go through is inserting their own prompt for the truth or dare. The user flow for inserting the prompt:

1. The user opens up the app and scans for the surface. After identifying white dots, tap on the screen to place the menu

2. When the menu is placed: the Truth card and Dare card will pop up. The menu will contain a text field with the label "Enter Prompt:

3. Then the user taps on the text field and a key board will pop up.

4. User will be able to type in a prompt and either add it to the Truth prompts or the Dare prompts.

A user scenario that would help user engagement is to create a socializing score board. The score board will be created with the user's friends. The user and their friend will be able to exchange identification numbers and when a user completes a task, their score will go up. The score board will show scores of the user and their friends.

Low Fidelity Prototype

We worked on a low-fidelity prototype to understand the idea of what the user would eventually experience using our app.

The low-fidelity of our idea had a reality sequence: The first image on the left shows when an object is identified by our application. The next image models the scene when the user selects an item and the funny media is displayed.

The final image is a third person view of the entire app experience. We modeled the user flow using the wooden figures and the other objects in our makeshift cube scene represented the objects that the user would interact with through the app.
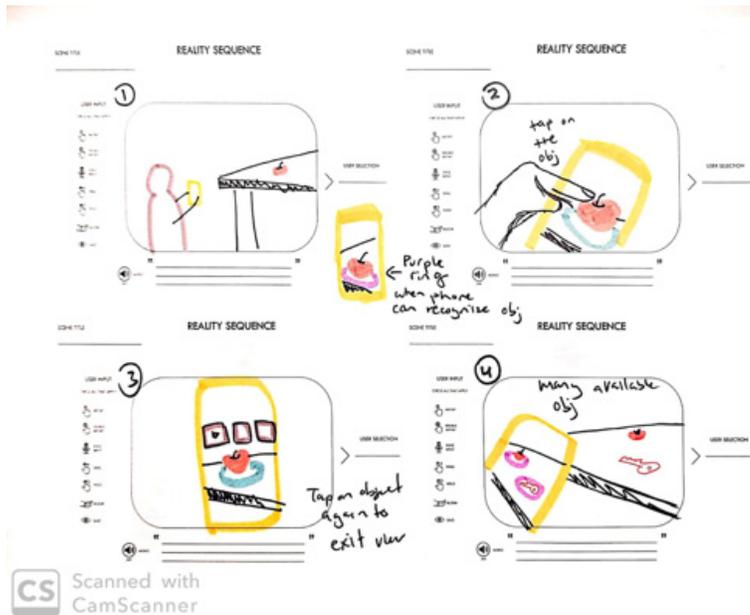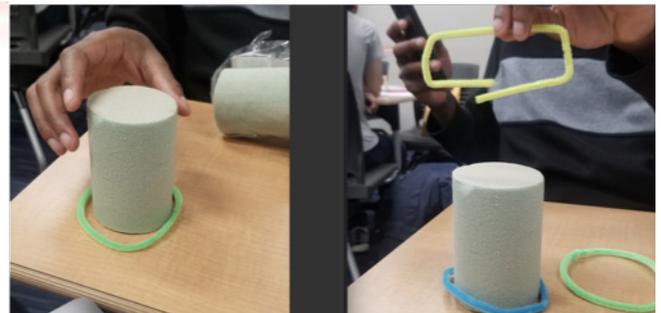

Figure 2: Low Fidelity User Flow

Figure 1: Low Fidelity reality sequence

High Fidelity Prototype

The first high fidelity prototype was created on CoreML with ARKit made by Apple developers. The user was able to identify an object and tap to label the object and get two cards. With this iteration we hoped to integrate object identification and truth or dare; after presenting at the Frameless, we realized that object identification does not align with our project goal. In the figure above, we were able to accomplish object detection and the visibility of two cards. We went through development difficulties in adding gesture, tap and incorporating the object detection data to the prompts.

Our next high fidelity prototype was a regular Truth and Dare game on Swift. At Frameless, after mentioning out difficulty in developing, we were encouraged to take little steps so we developed a regular truth and dare game without using the ARkit. Through this process, we were able to figure out in detail how to solve problems that we had not before. Using Core Data, we were able to store prompts and also have user input prompts

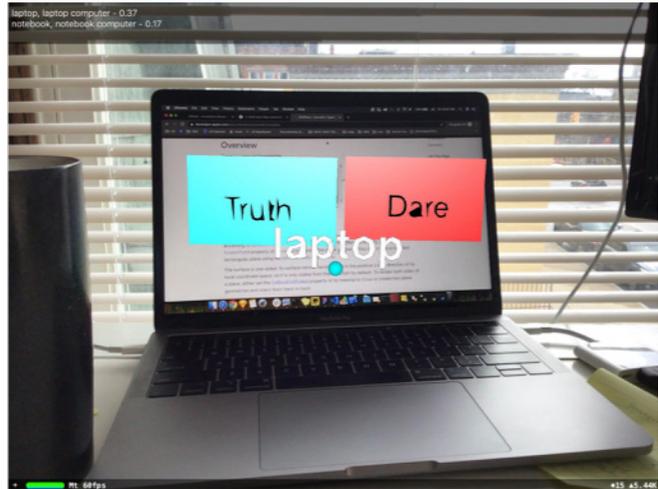*Figure 3: Low Fidelity ThirdPersonPOV*

Figure 4: High Fidelity Version 1

Our last high fidelity was developed on Android Studios. It currently is able to show a menu on a surface and the users are able to tap on either truth or dare button to show a prompt.

EVALUATION METHOD

To evaluate how users interacted with our app and hfind if we had met our goal, we came up with a list of observations to test for. To evaluate our product, we will have 3 college student participants.
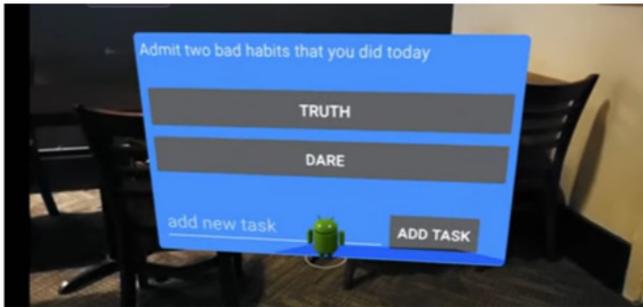

Figure 5: High Fidelity Version 2

Figure 6: High Fidelity Version 3

Testing Tasks

• User is greeted by a camera screen asking him to scan an object (an apple)?

• How does the user react?

• Does the user need more direction?

• Is the user confused when selecting truth or dare?

• Is the user able to understand the prompt and know where to click afterward?

• Does the user know where the exit point is?

Performance Measure

How long does it take for the user to navigate to an object and select a card number of confused faces, or points where users do not know what to do within the duration of one match.

• Number of "smirks" or smiles

• Mood report from the interview

Evaluation Methods

• cognitive walk-through/ think-aloud

• usability test

• survey/questionnaire

• interview

Instruction Script

"You would be playing an augmented reality game of truth or dare. While you play this game, I would like you to say everything you are thinking out loud so we can improve the product" When the user gets stops talking: "Oh what are you thinking right now" or "How did that make you feel" or "Why did you do that"

Interview

• How was the Functionality, performance, navigation, gestural design, ease of use did any of the Truth cards make you smile?

• Did any of the Truth cards make you smile? if so which one if not, why?

• Did any of the Dare cards make you smile? if so which one if not, why?

• Would you play this game again?

• How was the Aesthetics, graphics, layout, visual appeal of the app?

RESULTS

Interview Results

We tested our system with a low-fidelity prototype because we did not have a working prototype a the time of testing. We evaluated tested the questions on using a mood report questionnaire. We told the users that they were going to be playing a game of truth or dare and the different tasks would be aimed at improving their mood. There were three different set of questions tested on the same set of users at different times. After each completing a test of tasks, the users were asked to complete a mood report questionnaire. We were analyzing the data set for the percentage of users that

reported having an improved mood after the game. 50 percent of people reported an improved mood for version 2 of the game so we decided to go with that.

FUTURE WORK

In the future, we would like to continue iterating on the idea of combining more AR features on our current solution. As we were working on this project, we iteratively focused on design thinking, improving our idea and debunking assumptions that we had previously made. Next, we would like to continue out design thinking but with trying to incorporate more ideas to incorporate AR.

CONCLUSION

In hindsight, we see now that there were so many ideas that we could have used incorporating Augmented Reality. This made me realize the power of talking to other people as many people had creative ideas. Going through this process we had a very hard time justifying that what we were building would have a successful outcome and what we did to combat that anxiety was to talk to people and hear their opinions. Through this process we realized that the main focus of this project should have been creatively using augmented reality to accomplish our goal; something that we wish we could have re-done is thinking of more creative solution using augmented reality.

WORK ALLOCATION ILENE

Ilene worked on understanding the problem and defining it through research and interviews. Through multiple iterations she came up with different solutions and created low-fidelity for multiple solutions. Ilene worked on the paper submission for the 2019 Frameless symposium at RIT created the and worked on the high-fidelity prototype and participated in the presentation and demo. Ilene finalized the low-fidelity prototype, 3 distinct user scenarios and wrote sample truth and dare cards. She wrote the the oral presentation, final report, and created website and the video for the final project.

Anesi

Anesi created the poster and the high-fidelity prototype for the poster presentation at Wegmans. He conducted the evaluations of the prototypes for the users and created the working prototype for the final project.

ACKNOWLEDGMENTS

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Editor's Note: This presentation was also presented at the Demo Ses sion during Frameless 2019.
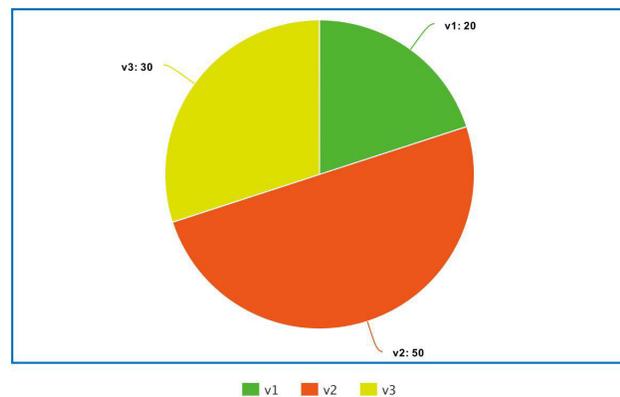

Figure 7: Mood after SmirKit

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