Initial Plan:

“Creating an Interactive Virtual Companion to Enhance Mental Wellbeing”

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Project Description

Mental health has always been important but with new advancements of technology, it has become more crucial that people are aware of their own mental health as well as how the devices that they interact with on a daily basis affect them. Due to the pandemic, this issue has been further exacerbated, increasing the need for individuals to be mindful of their own mental wellbeing [1]. Most of the applications that people interact with on their mobile devices, specifically social media, are built in such a manner to promote more user engagement which results in more screen time. This can cause individuals to spend too many hours of their time “mindlessly scrolling” looking for the next piece of content or information to entertain them [2]. How will this in turn affect that individual’s mental health and wellbeing over a long period of time? This is the reality that we are faced with currently. Generations of young people are being influenced in ways that many are not even conscious of [3].

By having massive corporations creating applications the focus will almost always be on how they are able to improve their profitability. Due to this the users often are the ones that lose out, as they are the victims of potential addiction to these kinds of applications [4]. This is often due to the way in which the applications promote user engagement. Impacting an individual's mental health and wellbeing is of course an ethical problem that these companies do not address. Some of these individuals will already be struggling with their own existing issues and by using certain applications they are made to feel worse thereby contributing further to their problems [5].

In this project, I aim to build an application that will help users become more aware of their mental wellbeing while also giving users who might be experiencing high levels of stress tools to manage their stress levels. How this will be achieved is by creating a virtual companion for the user, as a way of displaying their wellbeing back to them. A similar concept was investigated for helping older adults manage their wellness titled “YourWellness”, this investigation found “Self-reporting increases awareness of mental wellbeing” [6]. However, the “YourWellness” investigation did not include a virtual character which will be one of the main focuses for this application. The application will also have social features to encourage users to build a support circle of friends that they feel can help them when they are feeling down. I want to create an application that focuses on improving the users daily life and not encouraging them to spend hours on the application at one time. Having a user-centred design focus for the application will be important in allowing all features to be helpful to a user.

The application will allow users to reflect on their day, and will encourage users to follow guided exercises aimed to help them become aware of their thoughts and feelings. While users spend time on these exercises the virtual companion will change, this way a user can visually see how the application is helping them. Creating a virtual companion will also help to ‘gamify’ the user's experience. This can be an effective method in helping users become more aware of their own mental wellbeing.

Users will be able to create a “support circle” which will be a small collection of friends or family members who are able to interact with each other through the application, this will have an impact on their virtual companions. Interacting with a friend's virtual companions will also impact the user's own virtual companion. Screen time will also be a focus of the application ensuring that users do not spend hours on this application in a day, giving them a visualisation of how much time they have spent on the application will help users understand what they are spending their time doing. When a particular time has been

spent on the application it will not be available to use for the reminder of the day. This will be shown to the user as their companion wanting to sleep, this lets the application stay interactive with the users. The reason for this is to ensure that the users do not build a reliance on the application and are able to use the application in a casual way.

Aims and Objectives

For this to be a success it is important to highlight the aims and objectives of the project:

The aim of this project is to create a mobile application that will make users aware of their mental wellbeing, and to help users deal with any stress they might face. The application will guide users through the process of becoming more mindful through a variety of different means, simplifying these methods so that all are able to get the benefits of using the application.

Objectives of the project:

- Creating a way to help users become mindful.
- Make users more aware of their own mental wellbeing and how to improve it.
- Having users to interact with friends who can be supportive of their mental wellbeing.
- Providing exercises for users to complete that helps them manage their mental wellbeing.
- Supplying techniques and tools to users who might be feeling stressed in a simple and easy to understand way.
- Educate users on the importance of mental wellbeing and how it can be affected.

Key Features

In order to reach these objectives that I have outlined out key functionality of the system:

The first feature is to create an application that allows users to journal their day. Journaling will be a key functionality of the application as a result of this it will be the first feature of the project. Creating a way for users to journal their day and prompting users throughout the journaling process will ensure that they are able to get the most out of the journaling process. This is an issue for many people when they start journaling as they are unsure where to start and what to journal about.

Second feature is to allow users to create support circles through adding friends. For this feature of the application, it is necessary to create a friends experience that will differ from the traditional social media applications. This is the reason for the “Support Circle” name as it will reframe how users view their relationships with others. Users should be able to view each other's profiles and message each other. This is a key functionality.

The third feature and a key function to the application is interactive exercises that a user can follow to help them with different aspects of mental wellbeing. For the first implementation an interactive breathing exercise will encourage the user to take a minute and relax, this is to target users who might be getting anxious. These exercises will use the features of the device they are using, for example; haptic feedback, steps that the user has taken for the day, and heart rate of the user. For any guided exercise, research will be conducted to ensure that they are beneficial for a user.

Final feature is to have an interactive companion for the application. Although this is the last feature it is also the most important, having this feature listed last will ensure that if any problems do arise there is a suitable application that achieves the objectives I have set out. The interactive companion will change colour and appearance depending on; mood of the user, the guided exercises that user completes, interaction that user has with their friends, and based on how long the user spends on the application.

Ethical Considerations

I will need ethical approval as I intend to get feedback on the final iteration of the project. I will be using feedback that I have gathered from earlier questionnaires this year, for which ethical approval was granted, to justify the project iteration.

The application itself should not be storing any direct sensitive information for the user, one potentially sensitive area of information could be the user's password. So it will be crucial that the password is encrypted when it is stored in the database, it will also be made aware to the user that this information is being encrypted.

Potentially an ethical issue could be to do with the journaling feature of this application. Users might be sharing private information in their journal entries, because of this, transparency should be provided to the user. That the data stored from the journal entries will not be used for anything other than inside the application. It will also be encrypted when it is stored into the database. Users should be able to change their visibility setting of their journal entries, however, it will automatically be set to private.

Another potential ethical concern is about what we do when the users delete their account. It is necessary that we delete all information stored for that user if they are to delete their account. Keeping transparency with the users means that they should be alerted that their data is going to be deleted if they delete their account.

Work Plan

To achieve the objectives and aim of this project, I will list all the key features of the process and order them in a way to allow for the most efficient use of the time that I have.
I have divided all the tasks into sections and have listed the tasks for each section as follows:

Design:

- Virtual Companion
    - Design the companion
    - Consider how the companion can be used and for what instances it will become interactive
    - Create different variations of the companion
    - Model the virtual companion in 3D modelling software
- Guided Exercises
    - Research effective methods of improving mental wellbeing
    - Shortlist exercises for application.
    - Create list of what is needed for implementation per exercise
- Moods of user
- Consider the moods that the user can be experiencing.
- Exercises & Companion
    - Plan the changes of the virtual companion based on the exercises completed.
- Select design colours based on research of what is the most relaxing colours for the user.
- Smartwatch design
    - Select what the smartwatch will be displaying and how the user interacts with it
    - Create list of what is needed for smartwatch implementation
- Create a high-level prototype.

Implementation:

- Create user profiles
    - Login
    - Log out
    - Sign up
    - Delete account
- Create journaling feature
    - Enter text
        - Prompts for the user while typing
    - Add photo to journal entry
    - Text analyses of the journal entry
        - Create vocab hit words (the words needed to show a the users mood)
    - Delete Journal entry
- Create guided exercises
    - Follow list created in Design stage
- Create Virtual Companion
    - Displaying the virtual companion
    - Changes of the companion based on data from the user
- Smart watch component

    - Follow list created in Design stage

Documentation

- Feedback
    - Prepare the solution for testing from peers.
    - Create a questionnaire for peers to fill out regarding the final solution.
    - Collect feedback on solution
- Report
    - Document the process to ensure all important factors can be included in the final report
    - Create a final report with reflection on feedback

Supervisor Meetings

Weekly meetings with my supervisor are planned for the duration of this project. As it will allow me to ensure that I am keeping focused on delivering the needed materials of this project on a weekly basis.

Gantt Chart

The date indicates the date of the start of the week. The weeks in brackets highlight which weeks are reading weeks and which weeks are inside the easter break. This is so the plan that I have created using the university calendar can be shown clearly. The lighter shade colour shows that the work will begin on that section and the darker shade indicates what the primary focus of the week is.

Below is a Gantt chart outlining when the following sections will be completed by:

TASK NAME	FEBRURAY					MARCH				APRIL				MAY	
	Jan 31st	Feb 7th	Feb 14th	Feb 21st	Feb 28th	Mar 7th	(Mar 14th)	Mar 21st	Mar 28th	(Apr 4th)	(Apr 11th)	(Apr 18st)	Apr 25th	May 2nd	MAY 9th
- DESIGN -															
Virtual Companion															
Guided Exercises															
Moods of user															
Exercises & Companion															
Select design colours															
Smartwatch design															
Create a high-level prototype															
- IMPLEMENTATION -															
Create user profiles															
Create journaling feature															
Create guided exercises															
Create Virtual Companion															
Smart watch component															
- DOCUMENTION -															
Feedback															
Report															

Figure 1: Gantt Chart of planned work

Weekly Plan

Below is the breakdown of the weeks and how the workload will be spread over these weeks to ensure the deadline is reached. These are using the official university week dates and there will be reading weeks and easter break which will be used as any catch up weeks should I need it to catch up with any work that I may be falling behind on.

Week 1 & 2:

In this two-week period, the focus will be on completing the design stage of this project. The reason for this is to give a solid design foundation of the project before any implementation will occur. For exact dates see Figure 1. Also, during this time, I will begin documenting the process of what I am working on, this will continue throughout all weeks. Two meetings with my supervisor will take place during this time.

Week 3 & 4

In this two-week period, the implementation will start, more specifically focusing on the user profile and the journaling feature of the application. For exact dates see Figure 1. Starting with these features will ensure that the application has key functionality from the start.

Week 5

This week will be used as a continuation of the journaling features to ensure that the journaling aspect is complex and works as intended. For exact dates see Figure 1.

Week 6

In week six work will start on the guided exercises, this will be a large part of the application so this will continue through into the following weeks. For exact dates see Figure 1.

Week 7 & 8

Over these two weeks, work will continue the guided exercises, but work will also start on the virtual companion. This period will contain a reading week, so this is a period of 3 weeks. For exact dates see Figure 1.

These two tasks will be worked in parallel as they are connected with one another and it will mean that there is no reason to go back and combine the interaction between the two objects.

Week 9 & 10

This two week period will be separated by the easter break which will be another four weeks to focus on the implementation should that be needed.

In these weeks focus will shift more towards the documentation, although we will still be working on the implementation features such as the smart watch component. In these weeks the questionnaire for the feedback from users will be completed. Work will also start on the final report and will rely on the documentation that I will be doing throughout the process to assist with this.

By week ten the questionnaire will be sent out to the users and their feedback will be gathered.
For exact dates see Figure 1.

Week 11 & 12

The final two weeks will be focused on amending any bugs in the code but will be more centred around the report. Ensuring that the feedback of the users is recorded, and any iteration changes have been documented in the report will be crucial. For exact dates see Figure 1.

References

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