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Final Year Project Proposal

TU856

MindCare

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01/10/2024

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Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

Dan Russuleac

01/10/2024

Summary

My application (MindCare) will be a Web based Mental Health application that will allow you to figure out what stress you may be having in life, what problems are occurring, what affects you and how to deal with it all. My idea is to make therapy quick and easy for all (also free) by utilising AI and implementing it into my project. I want my users to be able to speak their hearts out and get useful feedback(speaking to their own "friend" (ai chatbot)), write in their journal about their progress, create daily tasks to keep mentally well or work on preset daily tasks, to update their own mood feelings so that they can see a chart of how their moods have been changing overtime – is it for better or for worse?

Essentially, I want to create a web application, easily accessible to all where if you're feeling some sort of stress or even feeling amazing, you have an application where you don't have to be alone, you can speak to an AI, create logs in your journal, daily tasks, mood charts, panic button. It'll work by allowing users to sign in through username/password and an email – no newsletters, not too much private information, where they then will be brought to a homepage where they will have a multitude of components to work with on their journey to a clearer mind.

I believe this is a great idea as every single person has faced stress or anxiety, many people are scared to speak up to other people and use their phones as an escape, I want to utilize that escape route to let them speak to someone, whether that someone be an AI or human. I want to give many people an application specifically designed towards mental health – not just telling ChatGPT you're not feeling well. I want to provide them with a multitude of tools alongside the chatbot to help people.

Background (and References)

AI has been the face of the internet for quite some time now. Most large companies are adopting AI to make life easier for their employees and customers. I want to provide that same service to the public. I have experienced bad anxiety and stress but have never went up to others to speak about it. However, I have spoken to AI about it. AI being more than just a simple ChatBot has been attempted. Snapchat have introduced a friend in your friend's list called "My Ai" which you can rename to whatever you want. He's supposed to act as a friend that you have on snapchat. I've used the chatbot before however it felt so lifeless, the responses were not the best and it did not seem natural at all. Also snapchat is not tailored specifically to mental health so when trying to speak to it about mental health, it felt extremely unnatural and as if I was not in the right place to be speaking about this. Hence my aim is to create that exact place for others, I want others to feel safe to speak about whatever. My application can be used by essentially anyone.

There has been a lot of research into AI vs other means when it comes to therapy and relieving stress:

https://www.jotpsych.com/post/ai-chatbots-psychotherapy?gad_source=1&gclid=Cj0KCQjwu-63BhC9ARIsAMMTLXRXnWW1VAeuM_H-uqDcZ_TcnkvOL3qugIJxz4bzDhOGho0QhePdTjEaAqJ2EALw_wcB – speaks about AI vs reading books
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10242473/ - speaks about mobile mental health apps and how poor AI models lead to loss of interest

There are a few mental health chatbots that already exist, however most of them try focus on simply just the chatbot and that's it. They don't implement other key features into their application, and most are paid or riddled with cookies/adds to somehow monetise their application.

https://elomia.com/
https://earkick.com/

There are a good few examples of the chatbot and AI implementations into a react/node.js project so for research on implementing there is a decent amount of resources available.

Proposed Approach

My proposed approach is to first look at existing websites that share the theme of my idea. Which I already have done, I want to see what positive and negatives they have to inspire my application. I also want to do research on behavioural patterns when it comes to users interacting on websites when in certain moods etc, studies based on what can calm a person's anxiety visually etc. Using all this information I would like to then build my application to suit the needs of my audience. I will also research on those idea's, find the best way of implementing them whether be an Api, node module, my own algorithm etc. I have already worked in react/node.js in my internship doing a lot of frontend so using react elements and modules for icons etc is something I want to do throughout my project. My main goal is to showcase the ability to make a complex application look professional and welcoming to people who want to improve their mental health.

The implementation will be done mainly using react/node.js with a locally hosted database(once completed, I will try dockerize my project and host it on a cloud server).I will use github to document my work as I progress. I will use the weekly logs as essentially what I have done and a change log to the application. My plan is to create a rough front-end, setup the back-end and database for the basic tasks such as signing in, saving conversations between user and chatbot(persistence) and also security (sessions). After that I want to expand on my other components such as the journal, diary, mood collection etc. This way I'll break down my project into manageable milestones in which I can see progression clearly.

I am planning on working with problems I never have before and to implement components that I have never done so a lot of research and debugging will have to be done, from completely scrapping methods to redoing code I plan to challenge myself. This is where the testing and maintenance will come into play. I plan to test my application throughout it's

development and at the end use testing such as unit testing and user testing to test the application in every scenario possible. As a mental health application, security is key, such as preventing SQL injections and keeping user's information safe as it will be very personal(encryption).

Deliverables

My Deliverables are:

1. Mental Health Chatbot
2. Journal Entry
3. Daily Tasks/Reminders/AI generated
4. Mood Tracking/Graphing
5. User Authentication
6. Sleep tracking
7. Positive Moments Sharing
8. SOS mode
9. Persistence
10. Front-end UI
11. Backend
12. Database

Technical Requirements

Hardware:
- Laptop

Software:
- Windows
- VSC
- Github
- Npm
- React – many imports of modules etc - frontend
- Node – endpoints – api - backend
- AI/ML API
- PostgresSQL

Infrastructure:
- Frontend/Backend Hosting
- Heroku – DB

- Domain name – possible

Conclusion

In conclusion, my application (Mindcare) aims to transform mental health support by providing an easy-to-use, web application accessible to everyone. By integrating an AI-powered chatbot with features like journaling, daily tasks, mood tracking, sleep monitoring, and sharing positive moments, MindCare offers multiple tools to help users manage stress and anxiety effectively. The application's focus on being free, user-friendly, and secure ensures that individuals can access the support they need in a safe environment.

MindCare is built on a strong technical foundation, utilizing modern hardware, advanced software technologies, and scalable infrastructure to ensure reliability and security. With a well-planned development process, ongoing testing, and continuous improvements, MindCare is designed to deliver a high-quality and impactful solution. By addressing the limitations of existing mental health chatbots and adding valuable features, MindCare stands out as a dedicated platform for mental well-being. Ultimately, MindCare seeks to guide individuals to take control of their mental health, making therapy more accessible and effective through technology.

References

Hint:

Use Zotero to manage your references (see Brightspace resources).

Use the **Harvard** referencing style

- https://www.zotero.org/support/quick_start_guide

Appendix A: First Project Review

Hint: review a past project from the library website that relates to your project idea.

Title:

Student:

Description (brief):

What is complex in this project:

What technical architecture was used:

Explain key strengths and weaknesses of this project, as you see it.

Appendix B: Second Project Review

Hint: review a past project from the library website that relates to your project idea.

Title:

Student:

Description (brief):

What is complex in this project:

What technical architecture was used:

Explain key strengths and weaknesses of this project, as you see it.