

Project Plan

Product-based Capstone Project

In recent years, the increasing prevalence of mental health issues among teenagers has become a significant concern. Despite the availability of various mental health resources, many teens still struggle to access timely and appropriate support. This gap in mental health services is often due to stigma, lack of awareness, and the shortage of personalized tools to address individual needs. This is confirmed by the data from ourbetterworld.org, that the 9 million or 3.2 percent of population in Indonesia suffer from depression. Therefore, Sixteen million people (6 percent) aged 15 and older have displayed symptoms of anxiety or depression, and about 19 per cent of Indonesian youth have had suicidal thoughts, and 45 per cent of them have admitted to self-harm. There is a need for an application that can help teenagers to manage their mental health individually. With the features offered like personalized mindfulness exercises, mood tracking, and stress-relief techniques, allowing users to take control of their mental well-being.

1. How can a mobile application like MindSpace effectively reduce anxiety among teenagers by providing personalized mental health support, and what features are most impactful in improving their overall mental well-being?
2. What impact does mood tracking within a mobile app have on users' ability to improve their mental well-being?
3. To what extent do users feel motivated and consistent in using the app to manage their mental health?

Team ID : C242-PS496

Team Member : (Please adjust according to your team members)

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Final Selected Themes:

Health Innovation: Empowering Vulnerable Communities for Health and Well-being ▾

Title of the Project:

MindSpace: Empowering Students' Mental Health Journey

Executive Summary/Abstract:

The increasing prevalence of stress and anxiety is a major concern for mental health worldwide. These conditions are affecting individuals productivity, relationships, and overall well-being, highlighting the urgent need for accessible and effective interventions. According to various studies, mental health issues, particularly stress and anxiety, have been on the rise in recent years, further exacerbated by factors such as work pressures, social media, and global uncertainties. Despite the availability of some support systems, many individuals, specifically teenagers or students struggle to access appropriate resources or maintain consistent mental wellness practices. These problems can be solved by making tools that empower individuals to manage their mental health individually. MindSpace, a mobile application, aims to provide such a solution. The app offers personalized mindfulness exercises, mood tracking, and stress-relief techniques, allowing users to take control of their mental well-being. By using these tools, individuals can reduce stress and anxiety on their own, without the need of constant professional support.

How did your team come up with this project?

We created this app to address the growing mental health challenges students face, particularly stress and overwhelm from academic pressures. Understanding that every student's experience is unique, the app offers highly personalized mental health support. By analyzing individual needs, it provides tailored recommendations, including stress relief techniques, coping strategies, and wellness tips that evolve with each user. Our goal is to empower students with the tools they need to manage their mental health effectively, ensuring they can thrive academically and emotionally in an increasingly demanding environment. This app is designed to provide the support every student deserves.

Project Scope & Deliverables:

Project Scope

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MindSpace is to support mental well-being by providing structured resources and tools that Encourage personal reflection, mindfulness, and stress management. It typically offers a range of activities and exercises, such as guided meditations, breathing techniques, and mental health tips—designed to help users build resilience, reduce anxiety, and improve overall emotional health.

Machine Learning

Week	Task	Deliverables
1.	Data Gathering	Collecting datasets for machine learning recommendation models
2	Build Machine Learning Model	Making machine learning model that has the best fits for our purposes using Content Based Model
3	Training and Testing Model	Training and Testing the models with the datasets that have been gathered before
	Check and Evaluate The Model	Checking the output of the models
4	Training and Testing Model	The model has an accuracy above 80%
	Check and Evaluate The Model	Checking the output of the models
	Machine Learning Deployment	Deploy the models to mobile/web with Tensorflow js/Tensorflow Lite

Cloud Computing

Week	Task	Deliverables
1	Gather Requirements	Collect system requirements for the

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		application
	Define System Architecture	Create a system architecture design for the application
	Design Infrastructure	Determine the infrastructure to be used for the application
	Design Database	Create a database for datasets and data needs
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	Design Database	Create a database for datasets and data needs
	Create API	Create REST APIs for the application
	Testing API	Testing an API helps to identify errors and bugs in the API implementation, including issues related to integration, performance, security, and scalability.
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	Testing API	Testing an API helps to identify errors and bugs in the API implementation, including issues related to integration, performance, security, and scalability.
	Deploy API	Deploying REST APIs to the cloud involves creating a programming interface that can be accessed over the internet from cloud-based servers.

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4	Deploy App	Deploy Application to Cloud and make Android Application and Cloud integrated.
Mobile Development		
Week	Task	Deliverables
1	Design UI/UX	Mockup of the application
	Transferring design to Kotlin (xml)	XML file that implements the mockup of the application
2	Making architecture component	Successfully to make the implementation of the code of the android architecture component
3	Testing with Machine Learning	The image processing feature has successfully run
4	Testing with API	Make Android Application and Cloud connected
	Finishing the App	The application has run successfully without any issues.
Finishing		
Week	Task	Deliverables
5	Project Brief	Project Brief report
	Creating a presentation	Creating a 10-minute group presentation

Project Schedule:

[illegible]

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[illegible]

+ Capstone Project Schedule

Based on your team's knowledge, what tools/IDE/Library and resources that your team will use to solve the problem?

Machine Learning :

- **Google Colab :**

Google Colab is used to run python code by utilizing GPU and TPU for free from Google. This platform is suitable for use in creating and testing Machine Learning models, with support for popular libraries such as TensorFlow, PyTorch, and scikit-learn, as well as easy collaboration through integration with Google Drive.

- **Github :**

GitHub is a platform for managing projects that integrates machine learning, cloud computing, and mobile development. With features such as version control, repository-based collaboration, and integration with various development tools, GitHub makes it easy to coordinate teams, share code, track changes, and maintain consistency in cross-disciplinary development.

Mobile Development :

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- **Android Studio :**

Android Studio will be mainly used as the main tools to create the android

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application, handling the front end, and where the implementation of machine learning takes place.

- **CameraX :**
CameraX helps to analyse the image taken so users mood can be captured through the application and thus can determine the user's particular mood for the day.
- **Firebase :**
Firebase will be mainly used to host the machine learning model so it can be used in the application without having to plant the model inside the application therefore our team could give new model updates right through the firebase server, without having to change the version machine learning model manually through the application
- **Medioplayer :**
Media player usage will mainly focus on the meditation feature of the app where users can play their own songs through their own choosings.
- **Background service :**
Setting out timer and notification will be easier with background service as well as allowing music to be played in the background when application is already minimized.
- **JobScheduler :**
JobScheduler is a tool to set out a specific task at a given time interval so the application can send out daily reminders and notification to the user

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- **Google Cloud:**
Google Cloud offers a suite of cloud services, including computing, data storage, machine learning, and big data. With features such as Compute Engine, Cloud Functions, and Kubernetes Engine, our team can deploy scalable applications, manage databases, and analyze large datasets effectively. Google Cloud also ensures high availability and security, which are crucial for modern application development.
- **Postman:**
Postman is a popular API development and testing tool. It simplifies API workflows

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by providing features like automated testing, mock servers, and API monitoring. This allows our team to efficiently develop, test, and debug APIs. Postman's collaboration tools also help ensure smooth integration between back-end and front-end teams.

- **VS Code (Visual Studio Code):**

VS Code is a lightweight, powerful code editor with built-in support for debugging, version control, and extensions for various programming languages and frameworks. Its flexibility allows our team to work on different aspects of the project, including front-end, back-end, and infrastructure code, all within a single tool.

- **API Library:**

API libraries are collections of pre-written code that simplify the process of interacting with APIs. They provide a structured way to send requests, handle responses, and manage authentication, enabling developers to integrate external services and functionalities efficiently without having to build everything from scratch.

Based on your knowledge and explorations, what will your team need support for?

- Mentors
- Mental condition test dataset
- Google cloud credits
- Android mobile device

Based on your knowledge and explorations, tell us the Machine Learning Part of your Capstone!

Through our exploration, MindSpace is a mental health app using machine learning to offer personalized insights and recommendations. By assessing risks for anxiety, stress, and panic attacks, it provides tailored feedback and guidance. Users receive strategies and techniques that match their unique mental health needs, promoting effective, individualized support.

Based on your knowledge and explorations, tell us the Mobile Development Part of your capstone?

The app will be built with Android Studio and Firebase, featuring an always-online platform with mood tracking, meditation, therapy, mental health screening, TensorFlow Lite for the AI backend, and personalization to fit individual users.

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approximate figma design:

<https://www.figma.com/design/Cbq4jSjDZ7yGIWNi1M7OzV/Untitled?node-id=0-1&t=FkKJG9pxYJElglj1-1>

Based on your knowledge and explorations, tell us the Cloud/Web/Frontend/Backend Part of your capstone?

API endpoint, data storing, and authentication process will be handled by using cloud services, while the front end will be created using android studio and its respective tools, and to use the API there will be a Data Access Object within the android application.

Based on your team's planning, is there any identifiable potential Risk or Issue related to your project?

There can be plenty of reasons that could cause the project to derail completely or even worse, unfinished, however the main reasons would be lack of cooperation, lack of communication, unwillingness to learn or fix the mistakes we have created, and lastly a conflict of interest, the key to all this of course, is simply just to keep our heads down and work to finish the project with as little as distraction as possible, keeping good communication at all times and a commitment to cooperate.

Any other notes/remarks we should consider on your team's application

Although there are already several applications available for monitoring mental health conditions, tracking mental well-being, supporting meditation, and offering guidance to improve mental states, our goal is to consolidate these functions into a single, user-friendly platform. This unified application would make it easier for students or users to consistently engage with their mental health care. By integrating all essential tools in one place, we empower individuals to take control of their mental well-being. The app encourages users to manage their condition independently, when possible, before suggesting they consult with a mental health professional if additional support is needed. This approach helps foster continuous self-care and awareness, promoting a proactive attitude toward mental health.