# MASTISHK: A MENTAL WELLBEING PLATFORM

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***Abstract:*** MASTISHK, the Engineering student mental health tracker, offers a pioneering solution to address the escalating mental health challenges encountered by engineering students This mobile application blends mood tracking, sentiment analysis, wearable device integration, machine learning, and personalised stress relief measures. The project's uniqueness lies in its comprehensive approach, amalgamating user data and feedback to enhance emotional well-being. It strives to empower engineering students by providing a user-friendly platform for real-time emotional assessment and tailored support, ultimately promoting a healthier academic journey. In the demanding world of engineering education, students often grapple with intense academic pressures, leading to stress, anxiety, and, in some cases, depression. Recognising the magnitude of this issue, the MASTISHK project was conceived, aimed at offering comprehensive mental health support to engineering students. Through a multidimensional approach, this review paper delves into the literature survey and implementation of the MASTISHK project, which incorporates mood tracking, sentiment analysis, wearable technology integration, and machine learning. The implementation of research for the MASTISHK project began with an extensive literature survey. This survey sought to gain a deeper understanding of the mental health challenges faced by engineering students and the potential ways technology could mitigate these challenges. Crucially, this research phase allowed the project to be grounded in evidence and guided by lessons from prior studies.

***Index Terms -*** NLP, Text analysis, PHQ-9, Machine Learning, Sentiment analysis.

## I. INTRODUCTION

MASTISHK, the Engineering Student Mental Health Tracker, offers a pioneering solution to address the escalating mental health challenges encountered by engineering students. This mobile application blends mood tracking, sentiment analysis, wearable device integration, machine learning, and personalised stress relief measures. The project's uniqueness lies in its comprehensive approach, amalgamating user data and feedback to enhance emotional well-being. It strives to empower engineering students by providing a user friendly platform for real-time emotional assessment and tailored support, ultimately promoting a healthier academic journey. MASTISHK is engineered with multifaceted objectives: To develop an intuitive mobile application for real-time mental health assessment, to harness natural language processing for sentiment analysis, to integrate wearable devices for continuous biometric data collection, to apply To develop an intuitive mobile application for real-time mental health assessment, to harness natural language The project aspires to provide a one- stop platform for engineering students to address their mental well-being. MASTISHK recognises these prevalent struggles and endeavours to bridge this critical gap in mental health support for engineering students. By leveraging advancements in technology, the application seeks to provide a holistic solution. It aims to assess the mental state of users using various metrics like mood tracking, sentiment analysis, and wearable device data (such as heart rate and sleep patterns). This data-driven approach enables MASTISHK to offer

personalised recommendations and interventions, guiding students toward practices that promote mental wellness. The application's comprehensive nature isn't just limited to evaluation; it extends to providing actionable steps and resources, empowering students to actively manage their mental health.

## II. REVIEW OF LITERATURE

1. Title of paper: Mental Health Smartphone Apps: Review and Evidence-Based Recommendations for Future Developments.
Author and year: Kyriaki G. Giota, George Kleftaras,2014

Positive aspects: It became critical to layout an MHapp the usage of a behavioural plan and interactive framework that encourages the person to interact with the app.

Limitations: A preceding systematic assessment found out a entire loss of trial-primarily based totally proof for most of the loads of MHapps to be had. for many of the hundreds of MHapps available.

2. Title of paper: Insights from person opinions to enhance intellectual fitness apps.
Author and year: Felwah Alqahtani, Faculty of Computer Science, Dalhousie University,January 10, 2020

Positive aspects: Based on our analysis, customers appreciated apps which can be usable, provide a lot of capabilities and alternatives, are personalised, affordable, informative, credible, and secure.

Limitations: Poor usability, a loss of choice variety, personalisation, consumer service, trust, and safety additionally ends in sadness of apps. 3.

3.Title of paper: Developing mental health mobile apps: Exploring adolescents' perspectives.

Author and year: Rachel Kenny, School of Psychology, University College Dublin, November 10, 2014.

Positive aspects: Adolescents use their telephones on a day by day foundation and are in all likelihood to locate them attractive as a acquainted intervention medium. Mobile interventions primarily based totally on self-tracking concepts can be powerful in lowering depressive signs and symptoms amongst youth with intellectual fitness problems.

Limitations: Confidentiality became a key concern, that is in keeping with youth wishes from intellectual fitness offerings in standard. Thus, controls over privateness settings and password safety are crucial capabilities that need to be included into intellectual fitness apps.

4. Title of paper: Adoption of Mobile Apps for Depression and Anxiety: Cross-Sectional Survey Study on Patie Interest and Barriers to Engagement.
Author and year: Jessica Lipschitz, PhD Department of Psychiatry Brigham and Women's Hospital,25.01.19.

Positive aspects: They are technology which could attain sufferers past the confines of conventional brick-and-mortar sanatorium visits and interact them directly, with inside the context in their day by day lives. For those motives, cellular apps also are a completely unique remedy choice to implement, one which calls for a radical knowledge of affected person views and choices if powerful implementation techniques are to be designed.

Limitations: Can produce much less nuanced information while solution alternatives do now no longer absolutely seize sufferer thoughts.

## III. METHODOLOGY

MASTISHK, the Engineering Student Mental Health Tracker, offers a pioneering solution to address the escalating mental health challenges encountered by engineering students. This mobile application blends mood tracking. The project methodology encompasses mobile application development, data analysis, machine learning model implementation, and wearable device integration. Data security and privacy measures will be a cornerstone of the project, ensuring users' information is protected and used responsibly.

- Utilizes the Flutter framework for cross-platform development.
- Collects user data through user-friendly interactions.
- Analyzes data to assess mental health. • Build the UI, with the custom tab-bar and the Tasks, Dashboard, and Doctor screens.
- Add the questions screen and figure out full-screen mode.
- Add double tap to disappear on the cards.
- Write a simple algorithm to display tasks based on user answers.
- Set-up your Firebase project for authentication and storage.

Hardware/Software Requirements:

- Smartphones (iOS and Android)
- Wearable devices (heart rate monitors, sleep trackers)
- EEG devices (if applicable)
- Flutter framework for app development
- Machine learning libraries (e.g., TensorFlow, scikit-learn)
- Secure server infrastructure for data storage
- Data analytics tools Software used : Android Studio, Xcode Simulator , flutter , firebase , Tensorflow etc.

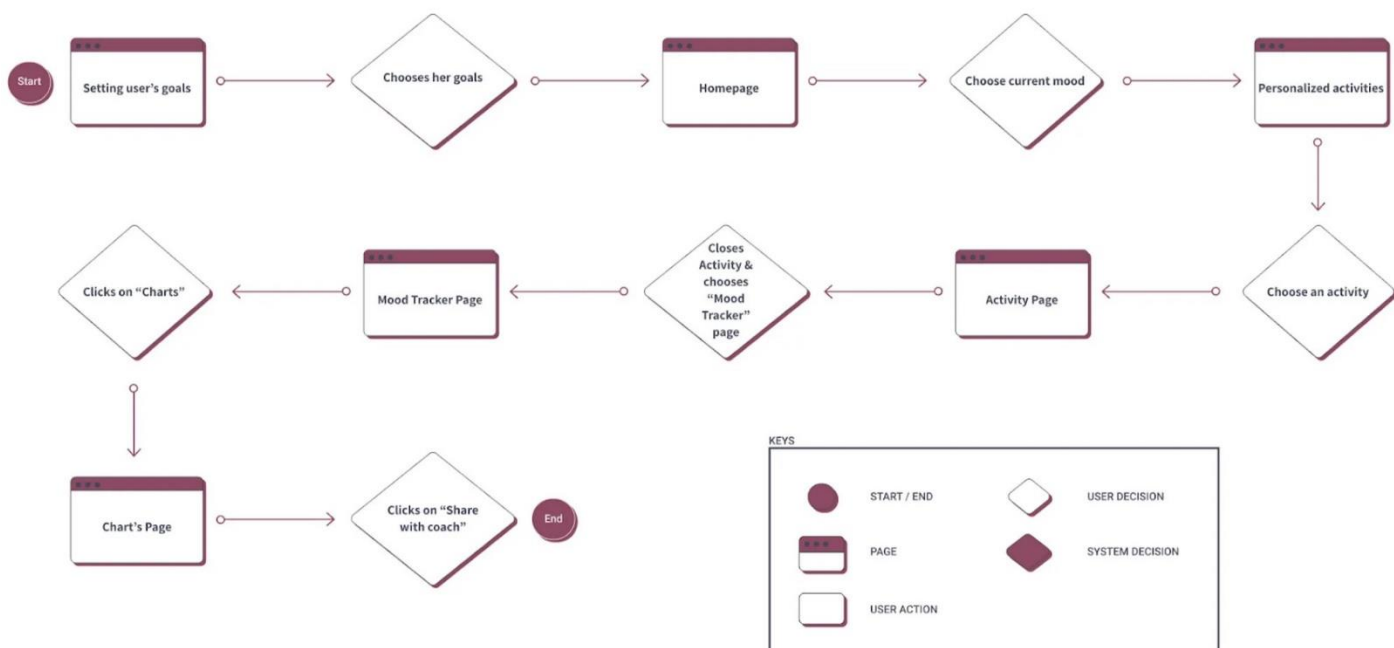## IV. PROJECT DESIGN

Data Flow Diagram



Fig.1 Data Flow Diagram
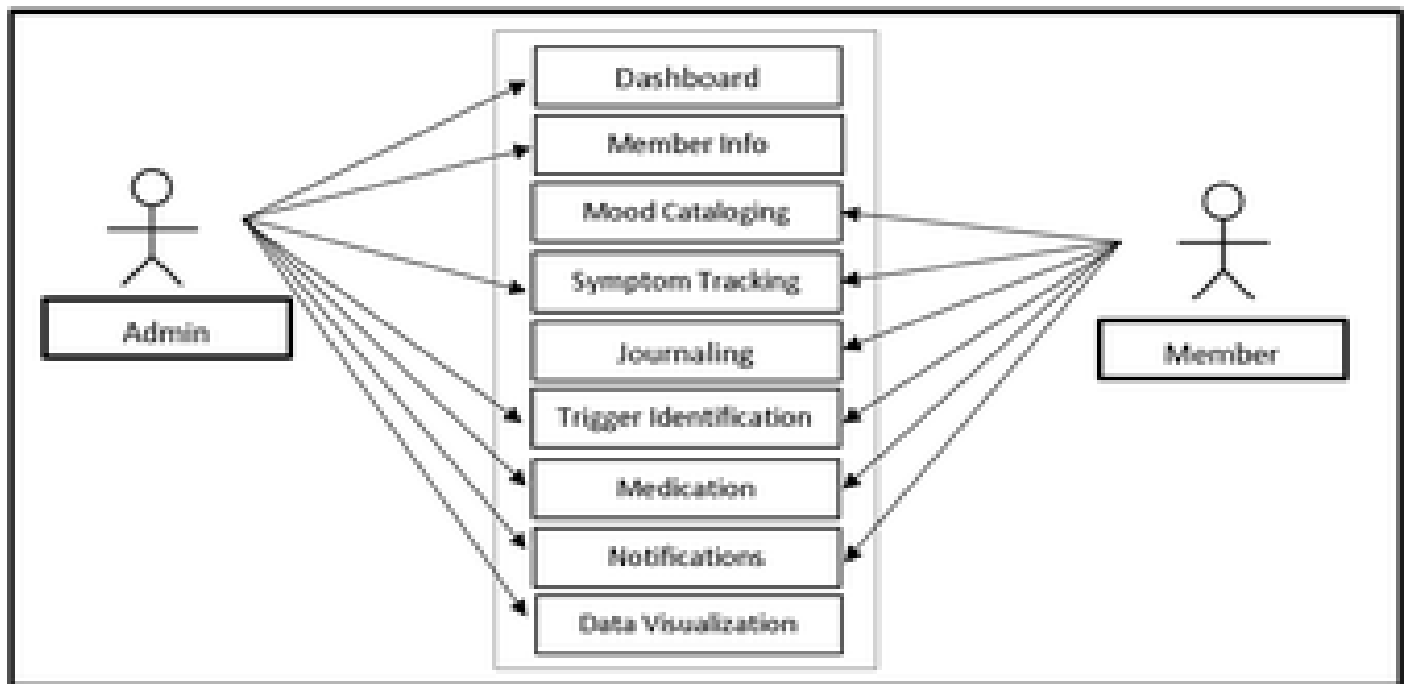
User Modelling Diagram



Fig.2 User Modelling Diagram

## V. IMPLEMENTATION DETAILS

1) Strategy- The first section of the cellular app improvement manner is defining the method for evolving our app. In this section, we blanketed the subsequent points-

1. Identify the app customers.
2. Research the competition.
3. Establish the app dreams and objectives.
4. Select a cellular platform on your app.
5. Analysis and Planning-
   At this stage, Analysis and making plans start with defining and shooting exact purposeful requirements.

2) Information Architecture & Workflows-

The first step of your cellular app layout manner is to decide the information your cellular app will show to the customers, the information it's going to collect, person interactions with the completed product, and the person trips in the app.

3) UI / UX Design:

The motive of an app layout is to supply seamless and handy person reviews with a cultured look. The fulfillment of a cellular app is decided primarily based totally on how nicely customers are adopting and profiting from all its capabilities. The purpose for cellular app UI / UX layout is developing outstanding person reviews making your app interactive, intuitive, and person- pleasant. While polished UI designs will assist with early adoption, our app needs to have intuitive person reviews to hold app customers engaged. Style courses encompass: What font own circle of relatives will your app textual content use? What will the shade scheme be?

4) App Development:

Planning stays a necessary a part of this section withinside the cellular app improvement manner. Before real improvement/programming efforts start, you'll have to: outline the technical architecture, select out a generation stack, and outline the improvement milestones. The front- give up is the local cellular app an give up-person will use. In maximum cases, cellular apps include interactive person reviews that use an API and a

back-give up for coping with information.We have used html and css for the designing, and the android webview element to display it, the app can also additionally make use of neighborhood information storage. Back-End/Server Technology- we have used mysql database for storing of all records and php to create connection, if you're the usage of a current back-give up platform, then adjustments can be wished for helping the preferred cellular functionality.

## VI. RESULTS AND SNAPSHOTS
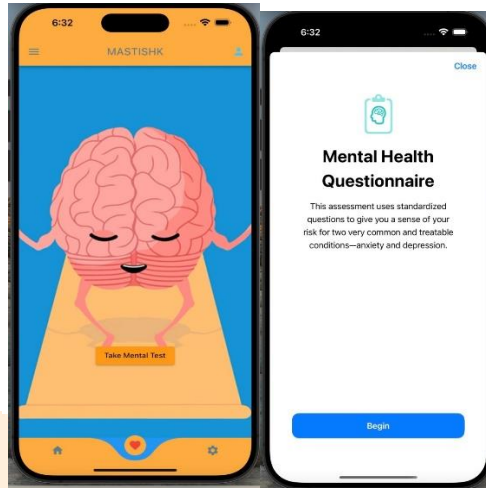


Fig.1 - Homepage Layout                    Fig.2 - Questionnaire Screen
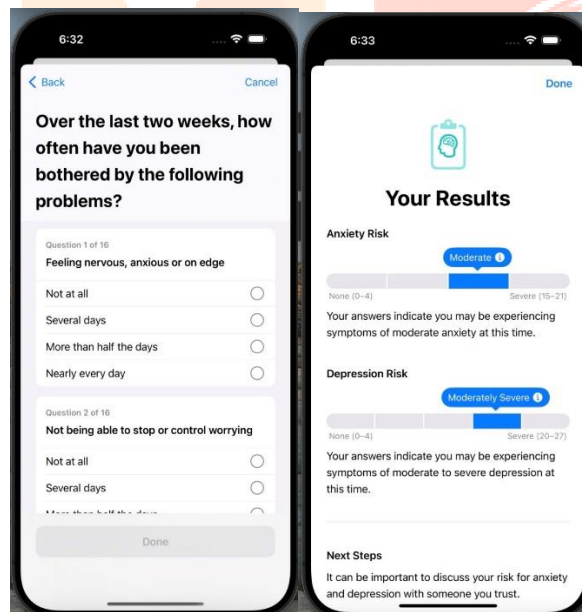


Fig.3 - List of Questions                    Fig.4 - Results Screen

## VII. FUTURE SCOPE

The scope of the MASTISHK project is to address the prevalent mental health challenges experienced by engineering students through a multifaceted approach. This comprehensive mobile application encompasses mood tracking, sentiment analysis, wearable technology integration, and machine learning for mental health assessment. Focused on the unique needs of engineering students, the project aims to provide a user-friendly tool for self-assessment and personalized support. By offering education, awareness, and practical measures, it seeks to create a holistic ecosystem for students' mental well-being.

• Comprehensive approach to address mental health challenges in engineering students.

• Mobile application encompassing mood tracking, sentiment analysis, wearable technology, and machine learning.

• Customized for the unique needs of engineering students.

• User-friendly tool for self-assessment and personalized support.

• Focus on education, awareness, and practical measures for mental well- being.

• Aims to create a holistic ecosystem for users' mental health.

• Development of a sustainable resource for addressing mental health in engineering education.

## VIII. CONCLUSION

In conclusion, Mastishk stands as a beacon of hope and support within the demanding landscape of engineering education. By fostering an ecosystem that prioritizes mental well-being, it not only aids in stress alleviation but also inculcates a proactive mindset among students.

Nevertheless, the project's journey doesn't cease here; the future holds promise for further refinements, such as enhancing hardware integrations, advancing machine learning capabilities, and ensuring continuous collaboration with mental health professionals to validate its efficacy. Ultimately, Mastishk signifies a paradigm shift, advocating for the holistic well-being of engineering students, ushering in a future where mental health holds a significant place alongside academic excellence. medical profession and society. The development of Mastishk, an innovative mental health tracking application tailored for engineering students, marks a pivotal step toward addressing the escalating mental health challenges prevalent in academic settings. This comprehensive project sought to mitigate stress, anxiety, and burnout among this demographic by amalgamating technological advancements with empirical insights from psychological research.

Mastishk's foundation rested on multiple pillars, including: Advanced Technological Integration: Leveraging Flutter framework and integrating wearable devices, such as heart rate monitors and sleep trackers, provided users with a holistic perspective of their mental well-being. The culmination of these efforts resulted in a robust platform that not only tracked but also offered proactive measures to promote mental wellness. However, Mastishk is not merely an application; it signifies a cultural shift toward acknowledging and addressing mental health within educational domains.

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