

MoodGenie – AI-Powered Mental Health Support for the Tech Community

Final Year Project Proposal

Bachelor of Science in Software Engineering

By

S#	Name	Registration #/Roll #/Section	Mobile #	E-Mail
1.	Ayesha Ishfaq	FA22-BSSE-166	0324-8529491	ishfaqayesha671@gmail.com
2.	Esha Farrukh	FA22-BSSE-172	03001717607	eshafarrukh7@gmail.com

Supervised by:

Sir. Ali Haider

_____ (Signature)



Department of Software Engineering
Lahore Garrison University
Lahore

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1. Abstract

Mental health has become a pressing concern in the tech community, particularly among software developers, research scholars, and tech students who experience high levels of stress, burnout, and anxiety due to long working hours, strict deadlines, and cognitive overload [1]. According to the World Health Organization, one in four people worldwide will experience a mental or neurological disorder in their lifetime [2]. Despite this growing concern, many individuals delay or avoid seeking help due to stigma, limited access, or high treatment costs [3].

Existing digital wellness applications attempt to bridge this gap but remain fragmented. Some rely solely on artificial intelligence (AI) chatbots that provide emotional support, such as **Woebot** or **Wysa**, while others focus on therapy booking or mood tracking but lack integration between self-help and professional guidance [4], [5]. These limitations highlight the need for a unified, affordable, and privacy-first solution designed specifically for the needs of the technology sector [6].

MoodGenie – AI-Powered Mental Health Support for the Tech Community is a cross-platform mobile application that integrates three essential features into one system:

1. An empathetic AI companion available 24/7 for self-care tips and mood check-ins,
2. Secure therapist access through text or video sessions with consent-based data sharing, and
3. Structured mood tracking with weekly and monthly analytics for personalized insights [7].

The system leverages **Flutter** for cross-platform development, **Node.js + Express.js** for backend logic, **Firestore / Firebase Cloud Messaging** for real-time updates, and **OpenAI / Hugging Face APIs** for natural-language interaction and emotional analysis [8]. With its privacy-first architecture, student affordability, and focus on the technology community, *MoodGenie* aims to make mental wellness accessible, stigma-free, and interactive [9].

2. Introduction

Mental health has emerged as one of the most critical global health concerns, with approximately **one in four individuals** worldwide expected to experience a mental or neurological disorder at some point in their lives [2]. Despite growing awareness, many individuals delay seeking professional help due to **stigma, high costs, or limited access to mental health services**, especially in low- and middle-income countries [3].

Within the **technology community**, these issues are even more pronounced. Software developers, research scholars, and tech students frequently encounter long working hours, tight deadlines, and high cognitive workloads that can lead to **burnout, anxiety, and imposter syndrome** [9]. The high-performance culture of tech-driven environments contributes to sustained stress levels and emotional exhaustion, ultimately impacting productivity and well-being.

Although several **digital mental health solutions** exist, many of them provide **fragmented or narrow support**. For example, AI chatbots like **Woebot** and **Wysa** have shown promise in delivering accessible, automated cognitive behavioral therapy, but they still lack emotional depth

and human empathy[4],[5]. Similarly, most therapy-based platforms remain **costly and inaccessible** for students or early-career professionals[6].

Recent research highlights the growing importance of **hybrid care models**, which blend **AI-driven self-help tools with professional therapy** to provide more personalized and scalable mental health support[7]. Furthermore, advancements in **large language models (LLMs)** such as **ChatGPT** have demonstrated potential in emotion detection and empathetic conversation generation[8]. However, despite these advancements, few existing applications are specifically **tailored to the unique stressors and mental health needs of the tech community**.

Therefore, the challenge lies in designing a **comprehensive, affordable, and privacy-first solution** that integrates AI-driven emotional support, real-time therapist access, and structured mood analytics within a single platform. **MoodGenie** addresses this gap by creating a unified digital ecosystem dedicated to the mental wellness of developers, students, and researchers—making mental health care more accessible, stigma-free, and personalized.

3. Problem statement

Mental health challenges have become a **global crisis**, affecting over **25% of the world's population** at some point in their lives [2]. Within the **technology community**, such a problem is even more pronounced. Studies show that nearly **58% of software developers** and **65% of IT students** experience **stress, burnout, or anxiety** due to **long coding hours, tight deadlines, cognitive overload, and isolation in remote work environments** [3, 9]. These issues negatively impact **focus, creativity, productivity, and academic performance**, leading to reduced job satisfaction and mental exhaustion [6].

Existing digital wellness apps provide **partial solutions**:

- **AI-based chatbots** (e.g., *Woebot*, *Wysa*, *Youper*) offer 24/7 support but lack emotional depth and personalized guidance [4, 5, 10]
- **Therapy-based apps** (e.g., *BetterHelp*, *Talkspace*) connect users to licensed therapists but remain **costly and inaccessible** for students or entry-level professionals [11].
- **Mood-tracking/self-help apps** (e.g., *Daylio*, *Calm*, *Headspace*) provide habit tracking and relaxation tools but **lack therapist integration and real-time analytics** [12].

This fragmentation creates a **significant gap** for users in tech-related fields who require **affordable, data-driven, and privacy-first** mental wellness support that fits their unique working patterns and stress profiles [3].

MoodGenie aims to **solve this unsolved gap** by building an **AI-powered hybrid mental health platform** combining:

1. **Empathetic AI companion** for real-time mood support [4, 5]
2. **Licensed therapist connectivity** through secure video/text sessions [11]], and

3. Mood analytics dashboard with personalized insights [12]

The **target customers** include:

- **University students in Computer Science, Software Engineering, and IT** (~2 million potential users globally in higher education) [9]
- **Professional developers and tech employees** (~26.3 million developers worldwide as of 2024, Statista) [2]
- **Research scholars and academic professionals** in technology domains (approx. 15% of university research population) [3].

The **significance of the proposed research** lies in developing a **validated AI-human hybrid model** that can serve as a foundation for **academic research in digital psychiatry** and **AI-driven emotional computing** [7, 8], as well as **practical adoption in universities and tech firms** to promote mental wellness [9]

By addressing this problem, MoodGenie will contribute to **Sustainable Development Goal (SDG 3 – Good Health and Well-Being** and **SDG 8 – Decent Work and Economic Growth** [2], empowering the tech community to maintain both **mental balance** and **professional excellence** [3]

4. Related Work

Several digital mental health applications have emerged to address the growing demand for accessible emotional wellness solutions. Each focuses on specific elements such as self-help, therapy, or emotional tracking; however, few provide an integrated, affordable, and domain-specific approach.

Wysa is one of the most popular AI-based mental health applications, providing a 24/7 conversational chatbot powered by CBT (Cognitive Behavioral Therapy), DBT (Dialectical Behavior Therapy), and mindfulness techniques. Users can access a large self-help library and optional text-based coaching sessions with licensed professionals. While studies validate Wysa's effectiveness in reducing symptoms of depression and anxiety, its free version offers limited access, and professional coaching requires costly subscriptions—making it less accessible for students and early-career developers [5, 13-15].

Woebot, another AI companion, uses evidence-based CBT and psychological principles to guide users through emotional challenges and promote healthier thought patterns. A clinical trial demonstrated its effectiveness among young adults within two weeks of use; however, it lacks therapist integration or human oversight, limiting its depth of intervention [4, 16, 17].

Youper adopts an AI-driven journaling approach, combining emotion tracking and personalized psychological insights. Although the app helps users recognize emotional patterns, it does not provide real-time therapist interactions, and the AI responses can feel superficial compared to tailored human feedback [10, 18, 19].

Earkick, designed around privacy and accessibility, enables users to log moods through text, voice, or video and receive feedback via an AI companion named “Panda.” The app also offers anxiety tracking, guided breathing, and CBT-based tools, but it is restricted to Apple devices and lacks therapist collaboration or cross-platform accessibility, making it less inclusive for Android or web users [20, 21].

Despite these advancements, existing platforms remain **fragmented, expensive, or generic**—offering isolated experiences rather than comprehensive mental wellness ecosystems. Most fail to address the unique professional stress experienced by individuals in **technology-related domains**, such as developers, engineers, or research students.

MoodGenie differentiates itself by combining:

- **AI-powered empathy and support,**
- **Secure therapist access** (video/text sessions),
- **Consent-based mood analytics**, and
- **Affordable, privacy-first architecture** into a single unified app specifically designed for the **tech community**. This hybrid approach aims to deliver a balance between AI automation and human empathy, ensuring users receive both instant guidance and expert consultation when necessary.

Table 1: Comparison of Existing Digital Mental Health Applications

App Name	Core Features	Limitations	References
Wysa	AI chatbot with CBT, mindfulness, journaling tools, and optional paid coaching	Free version limited; paid coaching expensive for students; repetitive chatbot replies	[14]
Woebot	Conversational CBT chatbot; automated mood tracking; short-term emotional support	No therapist integration; lacks human review or emotional depth	[16]
Youper	AI-based journaling, mood tracking, emotion analysis, self-reflection prompts	No real therapist connection; limited personalization; costly premium features	[18]
Earkick	Private AI mood & anxiety tracker; voice/video input; CBT tools; Apple Watch integration	Apple-only app; no therapist access; lacks community/peer features	[21]
BetterHelp / Talkspace	Licensed therapist sessions via chat/video; 24/7 availability	Subscription costly; limited AI support; privacy concerns	[22, 23]
MoodGenie (Proposed)	AI + therapist hybrid model; mood analytics; personalized insights; consent-based sharing; affordable for students	In development – aims to fill integration and accessibility gap	

5. Project scope

The goal of *MoodGenie* is to develop an **AI-powered mental wellness platform** tailored specifically for the **technology community**—including software developers, research scholars, and tech students—who face high stress, burnout, and cognitive overload due to long working hours and pressure to perform [3]. While digital wellness apps such as **Wysa**, **Woebot**, and **Youper** already exist, most offer only partial solutions—either limited AI chats or expensive therapy platforms [4, 5, 9].

MoodGenie bridges this gap by integrating **AI self-help**, **therapist access**, and **mood analytics** into a single privacy-first platform. This hybrid design ensures accessibility, affordability, and personalization—especially for those in the **tech domain**, who often hesitate to seek help due to stigma, time constraints, or financial barriers [6, 7].

Proposed Solution & Value Proposition:

MoodGenie offers the following core features:

- **24/7 Empathetic AI Companion:** Delivers conversational self-care tips, mood check-ins, and coping techniques such as breathing and journaling, inspired by CBT and mindfulness frameworks (Fitzpatrick et al., 2017; Inkster et al., 2018).
- **Therapist Integration:** Enables secure video and text sessions with licensed therapists, supported by consent-based mood reports for personalized guidance (Chen et al., 2024).
- **Mood Tracking & Analytics:** Logs daily emotional states, generating weekly and monthly summaries to detect stress patterns and progress trends (Topooco et al., 2022).
- **Privacy & Data Control:** Ensures users have full control over their data, including options to delete chat histories and restrict therapist access (Conrad, 2024).

How MoodGenie is Different:

Feature	Existing Apps	MoodGenie
AI + Therapist Integration	Wysa, Woebot offer AI only [4, 5]	Combines AI with real therapist access
Target Audience	General users	Specifically built for developers, researchers & students [3]
Affordability	Expensive premium tiers	Freemium + low-cost student packages
Privacy & Control	Limited user data deletion	Consent-based access, encrypted data
Cross-Platform	iOS/Android (limited features)	Android, iOS, and web dashboard planned
Personalization	Generic journaling	Context-aware AI for tech-related stress

MoodGenie thus introduces a **hybrid care model** that blends instant AI-based support with human empathy and professional supervision—offering a more holistic experience than existing apps [4, 5, 7]

Final Project Output:

The **final deliverables** will include:

- **Mobile Application (Flutter):** AI chat, mood tracking, therapist booking, and secure WebRTC-based sessions.
- **Therapist Dashboard (Web-based):** Consent-based user reports, session scheduling, and personalized insights.
- **Weekly/Monthly Reports:** Auto-generated summaries in-app, exportable in PDF format.

Hardware & Software Components:

Component	Technology / Tool	Purpose
Frontend	Flutter (Dart)[24]	Cross-platform UI
Backend	Node.js [25]+ Express.js[26]	Handles authentication, chat logic, appointments
AI/NLP	OpenAI API, Hugging Face Models[27]	Empathetic replies, sentiment detection
Database	Firebase Firestore[28]	Secure, real-time storage
Video/Text Sessions	WebRTC[29]	Encrypted therapist communication
Notifications	Firebase Cloud Messaging[28]	Daily mood reminders, booking alerts
Design Tools	Figma, Visual Paradigm, Canva[30-32]	UI/UX, wireframes, diagrams
Development	VS Code, Android Studio, GitHub[33-35]	Implementation & version control
Testing	Flutter DevTools[36]	API & functionality validation

6. Project development methodology :

Chosen Methodology: Agile (Scrum Framework)

MoodGenie will follow an **Agile (Scrum)** methodology to ensure iterative, flexible, and user-centered development [37]. This approach allows continuous feedback from supervisors and test users (developers, tech students, and researchers), ensuring the solution evolves effectively with

user needs. The development will be divided into **two-week sprints**, each producing a functional module — from AI chat integration to therapist booking and analytics visualization.

Phases of Development

1. Planning & Requirement Analysis:

Identify functional and non-functional requirements, study existing solutions (Wysa[13, 14], Woebot[16, 17], Youper[18, 19], Earkick[20, 21]), and finalize scope.

2. Design Phase:

Create wireframes and user flows using **Figma** [31] and **Visual Paradigm**[32], ensuring an intuitive and calming interface suitable for wellness applications.

3. Development Phase:

- **Frontend:** Flutter (Dart) for cross-platform mobile app [24].
- **Backend:** Node.js with Express.js for logic; Firebase Firestore for real-time storage and notifications [25, 26].
- **AI/NLP:** OpenAI API for conversational support and Hugging Face models for sentiment and risk detection [27].
- **Communication:** WebRTC for secure therapist video/text sessions [29].

4. Testing & Integration:

Use **Flutter DevTools**, **Postman**, and **Firebase Emulator Suite** for unit, integration, and system testing to ensure stability and accuracy [36].

5. Deployment & Evaluation:

Final MVP will run locally or on Firebase Hosting with GitHub-based version control.

Evaluation will involve user feedback from 10–15 participants in the tech community[28].

Justification of Method

The **Agile methodology** is best suited due to its adaptability, rapid prototyping, and ability to handle evolving requirements in an AI-based mobile app. The hybrid tech stack (Flutter + Node.js + Firebase) offers cost-effective scalability, while AI APIs ensure intelligent and empathetic interaction quality [7, 8, 24, 25, 28].

7. Project milestones and deliverables

The development of *MoodGenie – AI-Powered Mental Health Support for the Tech Community* will be divided into clearly defined milestones to ensure systematic progress and timely completion. Each milestone concludes with tangible deliverables that can be evaluated through supervisor reviews and user testing.

Milestone	Timeline	Key Activities	Deliverables
Milestone 1: Requirement Analysis & System Design	Sep – Oct 2025	<ul style="list-style-type: none">• Literature review & competitor analysis	

			<ul style="list-style-type: none"> • Functional & non-functional requirement documentation • UI/UX prototyping in Figma • Database & architecture design (Visual Paradigm) 	<ul style="list-style-type: none"> • Approved SRS • Final UI prototypes • ERD & System Architecture diagrams
Milestone 2: Core Development – AI & Mood Tracking Module	Nov – Dec 2025		<ul style="list-style-type: none"> • Implement AI Chatbot (OpenAI & Hugging Face APIs) • Develop mood logging & analytics (Firestore + Flutter charts) • Integrate Firebase Authentication 	<ul style="list-style-type: none"> • Working AI chatbot • Functional mood tracking dashboard • User login & profile system
Milestone 3: Therapist Booking & Video/Text Sessions	Jan – Feb 2026		<ul style="list-style-type: none"> • Develop therapist profiles & appointment booking system • Implement WebRTC for video/text sessions • Consent-based therapist dashboard 	<ul style="list-style-type: none"> • Functional booking system • Secure video/text session feature • Therapist data flow integration
Milestone 4: System Integration & Privacy Features	Mar 2026		<ul style="list-style-type: none"> • Connect all modules • Implement encryption, data deletion, and consent management • Optimize performance and cross-platform compatibility 	<ul style="list-style-type: none"> • Integrated MVP with all core features • Security and privacy verification report
Milestone 5: Testing, Evaluation & Documentation	Apr 2026		<ul style="list-style-type: none"> • Conduct unit, integration, and user acceptance testing • Fix bugs and finalize UI • Complete final documentation and prepare presentation 	<ul style="list-style-type: none"> • Fully tested and documented final system • Evaluation report & presentation slides

This milestone plan ensures each development stage produces measurable outputs, aligning with the Agile methodology and providing room for feedback after every sprint.

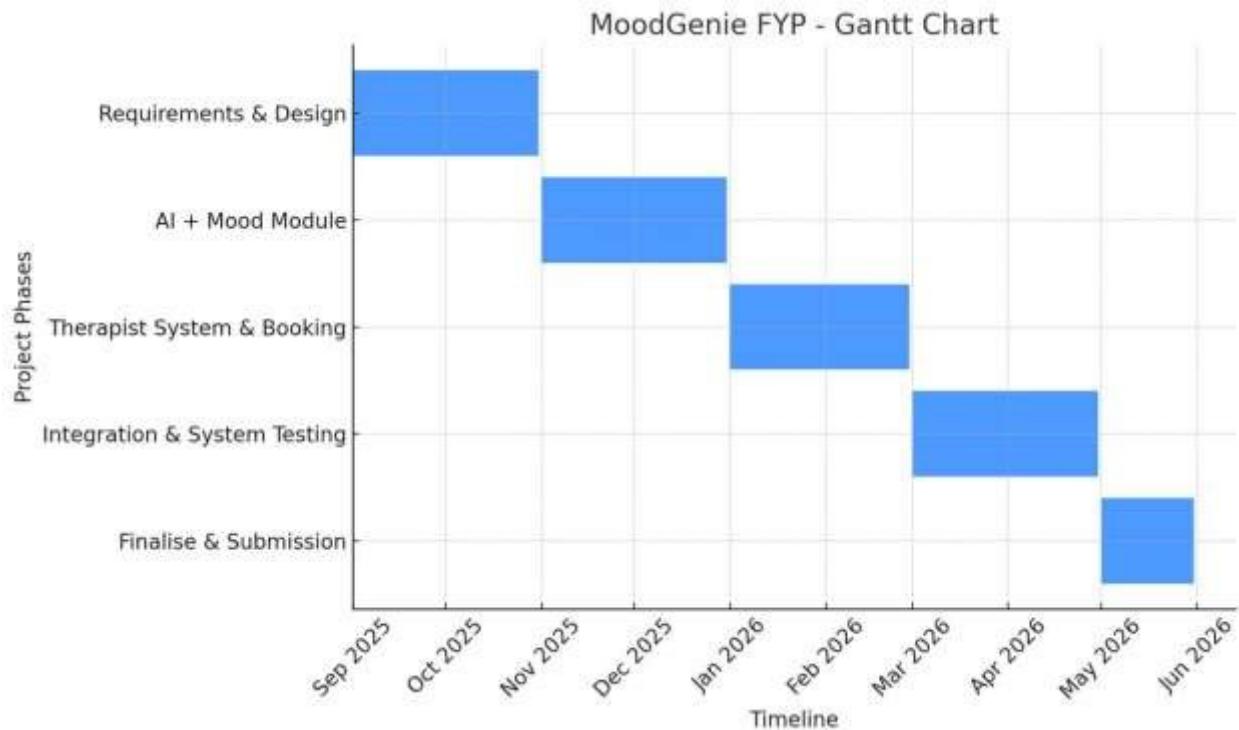


Fig: Gantt Chart For MoodGenie

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