

JSPM's
Rajarshi Shahu College of Engineering,
Tathawade, Pune – 33.
Department of Computer Science and Business Systems
AY: 2025-26 Sem: 7

Mini Project Report On
“Youth Mental Wellness Companion ”

Submitted by:

- Rohan Kudale (RBT22AR010)
- Arpit Baviskar (RBT22AR047)
- Shruti Shirpurkar (RBT22AR061)

Under the guidance of

Dr. Kavita Moholkar

Course: **Generative AI**

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Table of Contents

Mini Project Report On.....	1
1. Course Outcomes:	3
2. PO Mapped	3
3. PSO Mapped	3
4. SDG Goals Mapped	4
5. Abstract.....	5
6. Introduction.....	6
7. Literature Survey / Existing System	7
8. Proposed System.....	8
9. Methodology / Implementation.....	10
10. Results and Discussion	12
11. Conclusion and Future Scope	13
12. References.....	14
13. Appendix.....	15

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AY: 2025-26 Sem: 7

1. Course Outcomes:

CO1: Explain the basics, scope, and significance of Generative AI

CO2: Comprehend the complex architecture and essential components of LLMs

CO3: Apply prompt engineering techniques to design effective prompts and control AI outputs using tools like ChatGPT

CO4: Evaluate the architecture, training, and practical applications of GPT models

CO 5: Create images, videos, and programming code using AI tools and AI techniques

CO6 : Assess the ethical considerations, bias, fairness, and future trends in Generative AI, considering its impact on various industries.

2. PO Mapped

ALL POs

3. PSO Mapped

PSO1: To integrate principles of engineering in multidisciplinary approach to find out the solutions for complex engineering problems.

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AY: 2025-26 Sem: 7

PSO2: To design & develop the Automation & Robotics systems for various applications

PSO3: To make a career in Automation & Robotics through industry, entrepreneurship, research

and academia while contributing to the continuous development of individual, organisation, society and nation at large.

4. SDG Goals Mapped

Good Health And Well Being

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AY: 2025-26 Sem: 7

5. **Abstract**

This project presents a client side, privacy first conversational companion designed to support youth mental well-being through empathetic, context aware messaging. The system operates entirely in the browser with no server communication, ensuring confidentiality and fast response. A keyword-driven categorization engine maps user inputs to nine core emotional domains academic stress, anxiety, sadness, anger, social relationships, self-esteem, family/home issues, positive emotions, and general support each backed by curated supportive responses. A dedicated crisis detection module identifies high risk language related to self-harm and triggers immediate support messaging and safety guidance. The interface is designed with accessibility and visual calm in mind, utilizing gradients, high contrast, and responsive layouts. The project is best positioned as an adjunct to professional care, aligning with current research on mental health chatbots and privacy preserving client side applications. Future scope includes multilingual support, richer cultural tailoring, and optional professional referral pathways.

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AY: 2025-26 Sem: 7

6. Introduction

Background / Motivation: Young learners increasingly report academic pressure, anxiety, and social stress that impact well-being; scalable digital companions can offer immediate, stigma-free support and reflective prompts outside clinical settings. Ensuring privacy is essential for adoption, particularly for sensitive mental health contexts, making client-side architectures attractive for zero data leakage.

Problem Definition: Design an accessible, always available chat companion that provides empathetic, context aware support and crisis guidance without collecting or transmitting user data. The system should be transparent, deterministic, and safe, with clear non-clinical disclaimers.

Objectives: Build a fully client side chatbot with crisis detection, keyword based emotional categorization, curated supportive responses, and a responsive, calming UI; align with recognized privacy and client side security best practices.

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AY: 2025-26 Sem: 7

7. Literature Survey / Existing System

Review of Related Tools/Systems: Studies indicate that mental health chatbots can deliver measurable improvements in anxiety and depression symptoms when providing structured, supportive interactions and psychoeducational content. However, many solutions rely on server-side processing, introducing privacy, compliance, and data governance risks.

Gaps Identified: Common gaps include limited cultural localization, opaque data handling, dependence on accounts/logins, and variable clarity around crisis messaging; client-only deployments remain underutilized despite their potential to minimize privacy risks.

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Department of Computer Science and Business Systems
AY: 2025-26 Sem: 7

8. Proposed System

System Overview: A single-page web application using HTML/CSS and vanilla JavaScript to implement an empathetic chat interface, keyword-driven categorization across nine mental health topics, and a crisis detection module, all operating entirely in the browser with no server calls.

Features / Scope:

Empathetic conversation with curated responses per category (37+ messages), plus default fallbacks for open-ended support.

Crisis keyword detection for self-harm/suicide mentions that triggers safety-first guidance and encourages reaching trusted adults or helplines, reinforced by a persistent disclaimer.

Privacy-first architecture: zero telemetry, no external APIs, responsive UI, and accessibility-conscious styling.

System Architecture Diagram (Textual Description):

UI Layer: Header, subtitle, privacy notice, chat container, input form/button.

Logic Layer: handleUserMessage() routing → containsCrisisLanguage() → getCrisesResponse() or getKeywordResponse() → addMessage() rendering.

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AY: 2025-26 Sem: 7

Data Layer: mentalHealthResponses object with nine categories, defaultResponses array, and crisis copy inline in code (no network).

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AY: 2025-26 Sem: 7

9. Methodology / Implementation

Tools and Technologies Used: HTML5 semantic structure; CSS3 with custom properties, gradients, and flexbox for responsive design; vanilla JavaScript for event listeners and deterministic response selection; client-only runtime to enforce privacy.

Modules Description:

Message Handling: handleUserMessage() parses text, normalizes input, and routes to crisis or category flows; addMessage() updates the chat and manages scroll.

Crisis Detection: containsCrisisLanguage() scans for sensitive keywords; getCrisesResponse() returns immediate, empathetic, safety-oriented messaging.

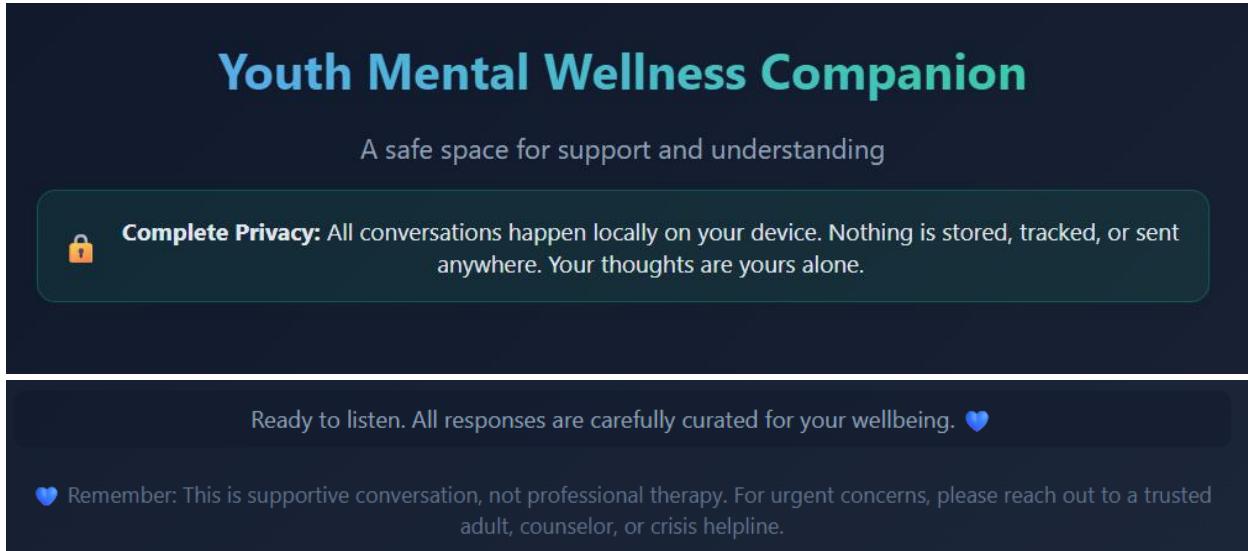
Categorization & Responses: getKeyWordResponse() matches input against nine category keyword lists (e.g., stressed, anxious, sad, angry, friendship, parents, confidence) and samples from curated responses specific to each domain.

UI/UX: Theming uses soothing blues/greens, rounded borders, high-contrast text, and clear separation of user/bot messages; a privacy notice and disclaimer are prominent in the header area.

Algorithms / Frameworks (if applicable): Deterministic keyword matching with ordered checks; crisis lexicon prioritized ahead of category mapping; no ML or external APIs to minimize risk and maintain explainability.

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Department of Computer Science and Business Systems
AY: 2025-26 Sem: 7

Screenshots or Outputs : Landing view with subtitle and privacy notice; a typical supportive reply to academic stress; a crisis response example with safety guidance; mobile-responsive chat view.



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AY: 2025-26 Sem: 7

10. Results and Discussion

Outputs Achieved: The system covers nine emotional domains relevant to youth contexts with 37+ curated messages and provides instant crisis prompts when high-risk language is detected; the UI remains responsive and accessible across devices.

Performance / Accuracy (if measurable): Response time is instantaneous due to fully local execution; categorization accuracy is tied to curated keyword coverage and is transparent by design; the safety-first flow ensures that any crisis signals override general categorization.

Comparison with Existing Methods: Compared to server-driven chatbots, this design offers stronger privacy guarantees and easier deployment, at the cost of adaptive ML-based personalization; evidence suggests chatbots can be beneficial adjuncts, and the privacy-first approach may encourage honest self-disclosure.

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AY: 2025-26 Sem: 7

11. Conclusion and Future Scope

Summary of Achievements: Delivered a privacy-preserving, empathetic youth companion that operates entirely client-side, includes robust crisis messaging, and offers structured, category-based supportive replies within a calming, accessible interface.

Limitations and Potential Improvements: Expand localized content (e.g., Marathi/Hindi), add culturally relevant examples, grow crisis resource listings, and explore optional on-device personalization for tone or style while preserving the no-server guarantee; consider journaling prompts and mood tracking stored only on-device.

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AY: 2025-26 Sem: 7

12. References

Research on mental health chatbots and outcomes: JMIR, PubMed, APSA perspectives.

Youth mental health context (higher education cohorts, India): Cross-sectional studies and reviews of stressors and supports.

Client-side privacy/security: Analyses and best practices for client-side app protection and benefits over server-side data handling.

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AY: 2025-26 Sem: 7**

13. Appendix

Chat container-

```
<div id="chatContainer" class="chat-container">  
  <div class="message assistant">
```

Hi there! 🌟 I'm here to listen and offer gentle support. This is a safe space where you can share what's on your mind.

Whether you're feeling great, struggling, or somewhere in between - all feelings are welcome here. How are you doing today?

```
  </div>  
</div>
```

Transformer.js

```
<!-- Transformers.js Integration -->  
<script type="module">  
  import { pipeline, env } from  
  'https://cdn.jsdelivr.net/npm/@xenova/transformers@2.17.2';
```

```
// Configure for browser-only usage  
env.allowLocalModels = false;  
env.allowRemoteModels = true;
```

```
// DOM Elements  
const chatContainer =  
  document.getElementById('chatContainer');  
const userInput = document.getElementById('userInput');  
const sendButton = document.getElementById('sendButton');
```

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AY: 2025-26 Sem: 7

```
const statusMessage =  
document.getElementById('statusMessage');  
  
// AI State Management  
let aiState = {  
    sentimentAnalyzer: null,  
    textGenerator: null,  
    isReady: false,  
    isInitializing: false  
};  
  
// Crisis Keywords - Immediate Safety Response  
const crisisKeywords = [  
    'suicide', 'kill myself', 'end it all', 'hurt myself', 'self harm', 'self-harm',  
    'want to die', 'better off dead', 'no point living', 'worthless life'  
];
```

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Youth Mental Wellness Companion

A safe space for support and understanding

 **Complete Privacy:** All conversations happen locally on your device. Nothing is stored, tracked, or sent anywhere. Your thoughts are yours alone.

Hi there! 🌟 I'm here to listen and offer gentle support. This is a safe space where you can share what's on your mind. Whether you're feeling great, struggling, or somewhere in between - all feelings are welcome here. How are you doing today?

Assignments feel like burden

Those academic pressures can feel intense. It's okay to feel overwhelmed sometimes - that shows you care about doing well. What matters most is taking care of yourself along the way. 🌟

Deadlines are unacceptable

It sounds like school is weighing on your mind. That's completely understandable - you're managing a lot! Taking small breaks and celebrating small wins can help. 🌟

Share what's on your mind... Send

Ready to listen. All responses are carefully curated for your wellbeing. ❤️

 Remember: This is supportive conversation, not professional therapy. For urgent concerns, please reach out to a trusted adult, counselor, or crisis helpline.