

Software Requirements Specification (SRS)

1. Introduction

Purpose

The purpose of this project is to design and develop a Web-Based Emotional Support Agent that leverages Artificial Intelligence to detect emotions using facial expressions, voice tone, and text sentiment. The system provides empathetic chatbot responses, wellness suggestions, and crisis support, aligning with some of the SIH problem statements:

- Students' Mental Well-being Platform
- AI-enabled system for early detection of mental health issues
- Reducing stress & improving mental health using AI-driven solutions

Scope

The system is intended for the general public, especially students and young professionals facing stress. Initially, the solution will be a web-based application for hackathon demonstration, with clear scope to expand into mobile applications and IoT integration in the future.

2. Overall Description

Product Perspective

A browser-based application that interacts with users via webcam, microphone, and chat interface. Backend AI models process facial, voice, and textual data to detect emotions and generate responses. Users receive immediate feedback (supportive responses, exercises, or helpline info).

Product Functions

- Detect emotions from face, voice, and text.
- Provide chatbot-style supportive messages.
- Suggest wellness activities (breathing, meditation, journaling).
- Track mood history and visualize patterns.
- Escalate to helpline suggestions in case of crisis signals.

User Characteristics

- Basic digital literacy (comfortable using web apps).
- Target group: youth, students, professionals.

Constraints

- Hackathon time constraints (prototype-level).
- 100% free and open-source technologies only.
- Sensitive data → must prioritize privacy.

3. System Features

Basic Features (MVP)

- Facial emotion detection (camera)
- Voice tone analysis (mic)
- Text sentiment analysis (chat input)
- Supportive chatbot responses

Intermediate Features

- Wellness exercise suggestions
- Mood history & tracking
- Crisis escalation (helpline numbers)
- Personalized responses

Advanced Features

- Multimodal fusion engine (combine face+voice+text)
- Gamified stress relief (points, streaks)
- Digital wellbeing coach (reminders, focus sessions)
- Offline/Edge AI processing
- Psychiatrist/counselor appointment integration
- Cultural & multilingual support
- IoT/wearable integration

4. External Interfaces

User Interface:

- Chat window + emotion detection dashboard

Software Interfaces:

- **Frontend:** React / HTML5, Tailwind/Bootstrap
- **Backend:** Python (Flask/FastAPI)
- **Database:** SQLite (prototype), upgradeable to MySQL/Postgres

5. System Requirements

Functional Requirements

- Capture and analyze face, voice, and text input.
- Provide supportive, empathetic responses.
- Suggest wellness activities.
- Store and display mood history.
- Detect crisis keywords and display helpline contacts.

Non-Functional Requirements

- **Performance:** Real-time response (≤ 2 seconds).
- **Usability:** Simple, friendly UI with low learning curve.
- **Privacy:** Process data locally where possible.
- **Scalability:** Easy to expand with more features in future.

6. Future Enhancements

- Mobile app version for Android/iOS.
- Integration with smartwatches & IoT health devices.
- Offline/edge processing for better privacy.
- Appointment booking with psychiatrists/counselors.
- Multi-language expansion (Hindi, English, regional).

7. Conclusion

This SRS defines the foundation for the Emotional Support Agent, a web-based AI system aimed at promoting mental health and reducing stress. The solution leverages free, open-source AI tools, is hackathon-ready, and demonstrates strong potential for scalability and real-world impact.

By aligning with SIH problem statements on student and public well-being, the project is both innovative and responsible, ensuring that the hackathon prototype can grow into a fully-fledged mental health support platform.