
Software Requirements Specification

for

MINDCARE

Version 1.0 approved

Prepared by

- 1. Akanksha Gupta**
- 2. Anushree Ghosh**
- 3. Shifa**

**KIET GROUP OF INSTITUTIONS ,
DELHI-NCR**

08/03/2024

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Introduction

1.1 Purpose

This document outlines the software requirements for Mindcare, a revolutionary mental health screening platform tailored for adolescents. Mindcare employs facial recognition and form-based methods to identify potential mental health issues, utilizing a robust dataset for accurate diagnosis. The platform provides personalized recommendations, integrates augmented reality for immersive meditation experiences, and offers educational content for enhanced mental health awareness. The chatbot functionality facilitates meaningful conversations, offering emotional support and guidance.

1.2 Document Conventions

This SRS follows standard conventions for clarity and consistency. Font styles and highlighting are used to emphasize key points and aid readability. Priority levels are assigned to higher-level requirements, and these priorities are assumed to be inherited by detailed requirements. Each requirement statement is designated with its own priority to ensure a clear understanding of its significance. This approach aims to maintain a structured and organized document that facilitates effective communication and understanding of the software requirements for Mindcare, the adolescent mental health screening platform.

1.3 Intended Audience and Reading Suggestions

This document is intended for developers, project managers, marketing staff, and anyone involved in the development or utilization of "Mindcare," a mental health screening website for adolescents. Developers will find detailed software requirements, including the use of facial recognition and form-based methods. Project managers can gain insights into the platform's features and prioritize tasks accordingly. Marketing staff will benefit from understanding the innovative technology and empathetic approach utilized in Mindcare. Users and testers will find information on the screening process, personalized recommendations, and chatbot functionality. Begin with the overview sections and progress to more specific details based on reader roles.

1.4 Product Scope

The scope extends to generating personalized mental health plans, potential VR integration for enhanced meditation experiences, continuous monitoring with adaptive feedback, and expanding the target audience to cover various age groups. Machine learning enhances the chatbot's responsiveness, aligning with our goal to revolutionize adolescent mental health care and promote overall well-being.

1.5 Reference

- [1] A. S. Vyas, H. B. Prajapati, and V. K. Dabhi, Survey on face expression recognition using CNN, in Proc. 5th Int. Conf. Adv. Comput. Commun. Syst. (ICACCS), Mar. 2019, pp. 102106, doi: 10.1109/ICACCS.2019.8728330.

Overall Description

2.1 Product Perspective

Mindcare emerges as a pioneering solution within the realm of adolescent mental health care. Serving as a standalone platform, it integrates innovative technologies and psychological insights to offer comprehensive screening and support. While not part of an existing system, it supplements traditional mental health services. Mindcare's architecture encompasses facial recognition and form-based methods for screening, personalized recommendations, augmented reality for meditation, educational content, and a chatbot for emotional support. This holistic approach aims to address the unique needs of adolescents, promoting early detection, well-being, and community support within a singular, user-centric environment.

2.2 Product Functions

- Conduct comprehensive mental health screenings for adolescents
- Utilize facial recognition and form-based methods for identification
- Diagnose and categorize specific mental health concerns accurately
- Provide personalized recommendations post-screening
- Integrate augmented reality for immersive meditation experiences
- Offer educational content to enhance mental health awareness
- Facilitate meaningful conversations through a chatbot functionality
- Provide emotional support and guidance to users
- Promote early detection of mental health issues
- Foster a supportive online community for adolescents

2.3 User Classes and Characteristics

Adolescents:

Characteristics: This user class comprises adolescents between the ages of 13 to 18.

Frequency of Use: Adolescents may use the platform periodically for mental health screenings, personalized recommendations, and educational content.

Technical Expertise: Varied levels of technical expertise may exist within this user class, but the platform is designed to be user-friendly and accessible to all.

Educational Level: Users in this class may range from middle school to high school students.

Experience: Adolescents may have varying degrees of experience with mental health resources and technology.

Parents/Guardians:

Characteristics: Parents or guardians of adolescents who may be involved in their child's mental health care.

Frequency of Use: Parents/guardians may use the platform to monitor their child's mental well-being, review screening results, and access educational content.

Technical Expertise: Technical proficiency may vary, but the platform should be intuitive for users of all levels.

Experience: Parents/guardians may have varying degrees of experience with mental health resources and technology.

Mental Health Professionals:

Characteristics: Licensed mental health professionals such as psychologists, counselors, or therapists.

Frequency of Use: Mental health professionals may use the platform to review screening results, offer guidance, and utilize the chatbot functionality for support.

Technical Expertise: This user class is expected to have a higher level of technical proficiency.

Experience: Mental health professionals will likely have experience in diagnosing and treating mental health issues.

Researchers:

Characteristics: Professionals or academics conducting research in adolescent mental health.

Frequency of Use: Researchers may use the platform to gather data, analyze trends, and evaluate the effectiveness of the screening methods and interventions.

Technical Expertise: Researchers are expected to have a high level of technical proficiency.

Experience: Researchers will likely have experience in data analysis and mental health research methodologies.

2.4 Operating Environment

Mindcare operates in a web-based environment, compatible with modern browsers such as Google Chrome, Mozilla Firefox, and Safari. The platform is designed to seamlessly function on operating systems including Windows (version 10 and above).

2.5 Design and Implementation Constraints

Mindcare's development is bound by several constraints, including adherence to strict privacy regulations and corporate policies governing the handling of sensitive mental health data. The platform must operate within specified hardware limitations, considering timing and memory requirements for optimal performance. Interfaces with augmented reality (AR), virtual reality (VR), and compatibility with various browsers impose specific technological requirements. Security considerations mandate encryption protocols and secure data storage. The use of specific technologies, tools, and databases aligns with industry standards. While the platform aims for user-friendly design, adherence to programming standards may affect ongoing maintenance responsibilities, potentially handled by the customer's organization.

2.6 User Documentation

Delivery formats will include accessible online resources, with documentation conforming to industry standards for clarity and user-friendliness. Regular updates to the documentation will align with software enhancements, ensuring users have the latest information for optimal engagement with the platform.

2.7 Assumptions and Dependencies

Mindcare's requirements are contingent on certain assumptions and dependencies. Assumptions include the availability of stable third-party or commercial components crucial for augmented reality (AR) and virtual reality (VR) integration. The project assumes a consistent and secure operating environment, meeting specified hardware and software requirements. Dependencies on external factors involve the reuse of certain software components from previous projects, as documented in the project plan. Any deviation from these assumptions or changes in external dependencies may impact the project's timeline, functionality, or overall success. Clear

communication and collaboration with relevant stakeholders are vital to address any potential discrepancies.

3. External Interface Requirements

3.1 User Interfaces

Mindcare's user interfaces prioritize a visually appealing and intuitive design. The logical characteristics encompass sample screen images reflecting the platform's features. It adheres to GUI standards and product family style guides, ensuring a consistent and user-friendly experience. Screen layouts are designed for easy navigation, incorporating standard buttons (e.g., help) on every screen. Keyboard shortcuts enhance user efficiency. Error messages follow standardized display formats. The software components requiring a user interface include the mental health screening tool, augmented reality (AR) meditation, educational content, and the conversational chatbot. Detailed design specifications are outlined in a separate user interface specification for comprehensive guidance.

3.2 Software Interfaces

Mindcare interfaces with various software components to ensure seamless functionality. It connects with databases, operating systems (e.g., Windows 10), and browsers (e.g., Google Chrome, Mozilla Firefox). Augmented reality (AR) and virtual reality (VR) components facilitate immersive experiences. The platform relies on specific tools, libraries, and integrated commercial components for secure data storage and encryption protocols. Interactions involve the exchange of mental health screening data, personalized recommendations, and chatbot responses. Detailed application programming interface (API) protocols govern these connections. The implementation constraint mandates a secure data-sharing mechanism, prioritizing privacy and adherence to industry standards for optimal integration.

3.3 Communications Interfaces

Mindcare necessitates various communication functions for optimal performance. These include web browser interactions for seamless user engagement, utilizing standard protocols such as HTTP. Communication with network servers involves secure data transfer, emphasizing encryption

protocols to uphold user privacy. Electronic forms within the platform require structured message formatting for consistent data exchange. The communication standards adhere to industry best practices, ensuring compatibility and reliability. Synchronization mechanisms are implemented to maintain real-time updates, particularly in continuous monitoring features. Mindcare prioritizes secure and efficient communication interfaces, employing encryption techniques and industry-standard data transfer rates to guarantee the confidentiality and integrity of user information.

4. System Features

4.1 Holistic Mental Health Screening

- *Description:* Implement evidence-based assessment questionnaires to identify various mental health concerns in adolescents.
- *Functionalities:*
 - Facial recognition for nuanced analysis.
 - Form-based methods for comprehensive screening.

4.2 AR Meditation Integration

- *Description:* Integrate augmented reality (AR) technology to provide immersive meditation experiences.
- *Functionalities:*
 - Develop diverse AR meditation scenarios.
 - Tailor scenarios to address different mental health needs.

4.3 Educational AR Content

- *Description:* Develop interactive educational content using AR to enhance mental health awareness.
- *Functionalities:*
 - Provide information on coping strategies and stress management.
 - Deliver AR-enhanced educational modules.

4.4 Chatbot for Conversational Support

- *Description:* Implement a conversational chatbot to offer immediate and accessible mental health support.
- *Functionalities:*
 - Train the chatbot to understand and respond to user concerns.
 - Provide guidance on various mental health queries.

4.5 User-Friendly Interface

- *Description:* Design a visually appealing and user-friendly website interface for easy navigation.
- *Functionalities:*
 - Prioritize accessibility for adolescents.
 - Create a positive and inviting user experience.

4.6 Privacy and Data Security

- *Description:* Prioritize the security and confidentiality of user data.
- *Functionalities:*
 - Implement encryption protocols for data transfer.
 - Ensure secure data storage practices.

These system features collectively contribute to the comprehensive and innovative approach of Mindcare in addressing adolescent mental health.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Mindcare demands optimal performance to ensure a seamless user experience and effective mental health support. The facial recognition component should provide quick and accurate analysis within seconds to avoid user frustration. The AR meditation scenarios must load swiftly for an immersive experience. Chatbot responses should be near-instantaneous, enhancing real-time conversational support. The overall platform responsiveness, including form-based methods and educational content delivery, should prioritize minimal loading times. These performance requirements aim to maintain

user engagement, uphold the platform's efficiency, and contribute to a positive and timely interaction with Mindcare's mental health screening and support functionalities.

5.2 Safety Requirements

Mindcare prioritizes user safety in its design and operation. The platform must adhere to industry standards and regulations governing the handling of sensitive mental health data to prevent unauthorized access or harm. Safeguards, such as robust encryption protocols and secure data storage practices, are implemented to ensure user confidentiality. The system must prevent any actions that could compromise the privacy and well-being of users. Compliance with relevant safety certifications is mandatory, aligning with external policies and regulations. Mindcare is committed to providing a secure and safe environment for users, mitigating potential risks and upholding the highest standards of user protection.

5.3 Software Quality Attributes

Mindcare prioritizes key software quality attributes to ensure a superior user experience. Usability is paramount, emphasizing an intuitive interface for ease of engagement. Adaptability is crucial, facilitating seamless integration with evolving technologies. Reliability is quantified with minimal downtime, ensuring consistent mental health support. Robust security measures ensure correctness and safeguard user data. Maintainability is addressed through clear documentation and modular design for efficient updates. The platform emphasizes usability over ease of learning, fostering a user-friendly environment. These attributes collectively contribute to Mindcare's commitment to delivering a reliable, secure, and user-centric mental health screening and support platform.