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1.Introduction

A) Purpose:

The purpose of this document is to outline the requirements for a web-based application designed to detect and prevent stress burnout in students and employees using machine learning techniques.
This system aims to provide users with tools and insights to monitor their stress levels, identify potential burnout risks, and access resources for prevention and management. The system will leverage data collected from user interactions and potentially integrated sources to provide personalized feedback and recommendations.

B) Scope:

The system's scope includes:

- Informative Static Pages: Comprehensive content on what stress and burnout are, their symptoms, and impact.
- Simple Self-Assessment: A user-friendly questionnaire to gauge current stress levels and burnout indicators, providing immediate, general feedback (e.g., "low," "moderate," or "high" stress).
- Resource Repository: Curated links and tips on stress management techniques, relaxation, and reputable mental health support organizations (with a focus on resources relevant to India).
- Intuitive User Interface: A clean, responsive design for easy navigation on any device.

C) Definitions, Acronyms and Abbreviations

- User- Individual using the website.
- Admin- Site administrator managing user accounts and site content.
- AI: Artificial Intelligence
- ML: Machine Learning (a subset of AI)
- Burnout: Emotional, physical, and mental exhaustion from prolonged stress.
- User: Refers to both students and employees.
- Web Application: Software accessed via a web browser.
- SRS: System Requirements Specification.
- UI/UX: User Interface / User Experience.
- HTTPS: Secure web communication protocol.
- GDPR/PHI: Data protection regulations (if applicable).
- Dashboard: Summarized data overview.

2.Overall Description

A) Product Perspective

The Stress Burnout Detection and Prevention System using machine learning is a standalone software application that can also be integrated with existing organizational platforms like HR management systems or wellness dashboards. It acts as an intelligent layer on top of user data sources (e.g., self-report surveys, digital activity logs), leveraging ML models to deliver stress and burnout insights and prevention strategies. The product is modular, supporting web and mobile deployments, and is designed for extensibility to allow future integration with third-party health and productivity tools.

B) Product Functions

- Data Collection: Gathers information via self-assessment questionnaires, digital footprint (such as app usage patterns or calendar events), and optionally biometric/wellness data (when available and with consent).
- ML-Based Analysis: Processes inputs to detect stress and burnout risk using trained machine learning models.
- Personalized Feedback: Provides users with real-time insights, visualizations, and tailored action plans or tips to manage stress.
- Intervention & Referral: Suggests preventive interventions (breathing exercises, breaks, counselling resources), with ability to alert designated personnel (e.g., HR, counsellors) if high risk is detected (configured for privacy).
- Reporting & Analytics: Dashboard views for individuals and, in anonymized/aggregated forms, for organizations to monitor group trends and evaluate intervention effectiveness.

C) User Classes and Characteristics

1.Students:

- Characteristics: Individuals enrolled in academic programs (e.g., college, university). They may experience stress from academic pressure, deadlines, social life, and future uncertainties.
- Needs: Easy-to-use interfaces, quick assessments, relevant study/exam-related stress resources, and flexible access.

2.Employees:

- Characteristics: Individuals in a professional work environment. They may face stress from workload, deadlines, workplace dynamics, and work-life balance challenges.

- Needs: Confidentiality, quick check-ins, professional development-related stress resources, and unobtrusive integration into their routine.

D) Operating Environment

Accessible via modern web browsers (e.g., Chrome, Firefox, Safari, Edge) on various devices (desktops, laptops, tablets, smartphones) with an active internet connection. No specific operating system is required on the client side beyond what supports a modern browser.

3. Specific Requirements

A. Functional Requirements

For our proposed system following functional requirements are applicable.

1.User Management:

- Registration: Allow new users (students/employees) to register with a unique email and password.
- Login/Logout: Enable secure user login and logout.
- Profile Management: Allow users to update their profile information (e.g., role, name, password).

2.Data Input:

- Questionnaire Completion: Allow users to complete periodic self-assessment questionnaires (e.g., daily, weekly).
- Mood Logging: Enable users to log their current mood (e.g., via a simple scale or emojis).
- Activity Logging (Optional): Allow users to optionally log daily activities (e.g., work/study hours, sleep, breaks).

3.Burnout Detection (ML Core):

- Data Processing: Process user-submitted data (questionnaires, mood, activities) for ML model input.
- Risk Assessment: Apply an ML model to assess the user's current stress level and burnout risk.
- Trend Analysis: Analyse and display trends in stress levels and burnout risk over time.

4.Personalized Feedback & Resources:

- Dashboard Display: Present a personalized dashboard summarizing current stress levels and risk.
- Insight Generation: Provide insights into potential factors contributing to the user's stress/risk.
- Resource Access: Offer access to a curated library of stress management articles, techniques, and external professional help resources.

5.Personalized Recommendations:

- Suggest specific resources or actions based on the ML assessment.

6.Notifications:

- Reminders: Send configurable email/in-app reminders for questionnaire completion or resource engagement.

B) Non-Functional Requirements

1.Performance:

- The system shall respond to user interactions (such as page loads and data submissions) within 3 seconds under normal load.
- Machine learning model inference for individual users shall complete within 1 second.

2.Security:

- All data transmitted between the client and server shall be encrypted using HTTPS.
- Implement strong password policies and secure authentication mechanisms.
- All user data shall be stored securely with appropriate access controls. User data will be anonymized for any aggregated reporting.
- Only authenticated users shall access their specific data and authorized features.

3.Usability:

- The system shall be easy to navigate and understand for users with basic web literacy.
- Adhere to common web accessibility guidelines (such as WCAG 2.1 AA) where feasible.

4.Maintainability:

- The codebase shall be well-documented and modular for ease of future updates and bug fixes.

5.Compatibility:

- The system shall be compatible with the latest two major versions of Chrome, Firefox, Safari, and Edge.

C) User Interface Requirements

1.Consistency:
The UI shall maintain a consistent look, feel, and navigation scheme across all pages, ensuring users recognize interface elements and experience predictable behaviour throughout the application.

2.Responsiveness:
The UI shall be responsive and render correctly on various screen sizes, including desktop, tablet, and mobile phone browsers, providing a seamless experience across devices.

3.Clarity:
All labels, instructions, and feedback messages shall be clear, concise, and easy to understand to reduce cognitive load and support users in all mental states.

4.Visual Feedback:
The system shall provide immediate visual feedback for user actions, such as loading indicators and success or error messages, to keep users informed about system status.

5.Data Visualization:
Stress level trends, mood changes, and other relevant data shall be presented using clear, intuitive charts and graphs that aid in user comprehension without overwhelming them.

6.Accessibility Considerations:
The UI shall use appropriate colour contrast, font sizes, and provide alt-text for images to enhance accessibility, complying with standards such as WCAG 2.1 to support users with diverse abilities.

4.Activity Diagram:

The activity diagram shows the step-by-step flow of the system, starting from user login and data input, followed by processing the data with machine learning models to detect stress and burnout risk. Based on the results, personalized feedback and intervention suggestions are provided to the user. If high risk is detected, alerts are sent to authorized personnel. The system also supports ongoing monitoring and reporting for individuals and organizations.

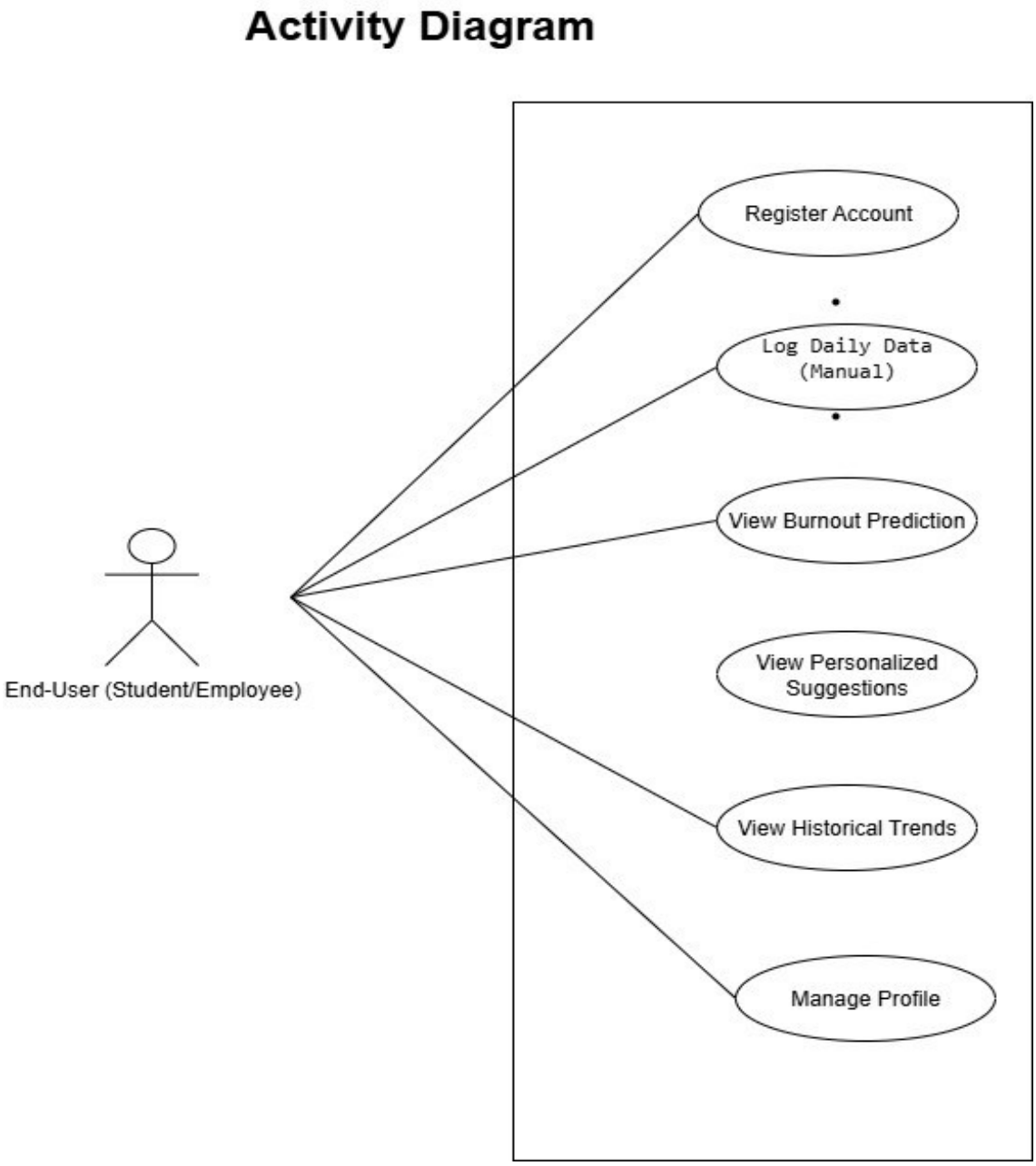

Figure-1 Illustrates Use Case Diagram

5. Data Flow Diagrams:

To visually illustrate how information moves throughout the Stress Burnout Detection and Prevention System, we've created a Data Flow Diagram (DFD). This diagram will show the various processes, data stores, and external entities involved, providing a clear map of the system's data interactions from a high-level overview down to its core functional components.

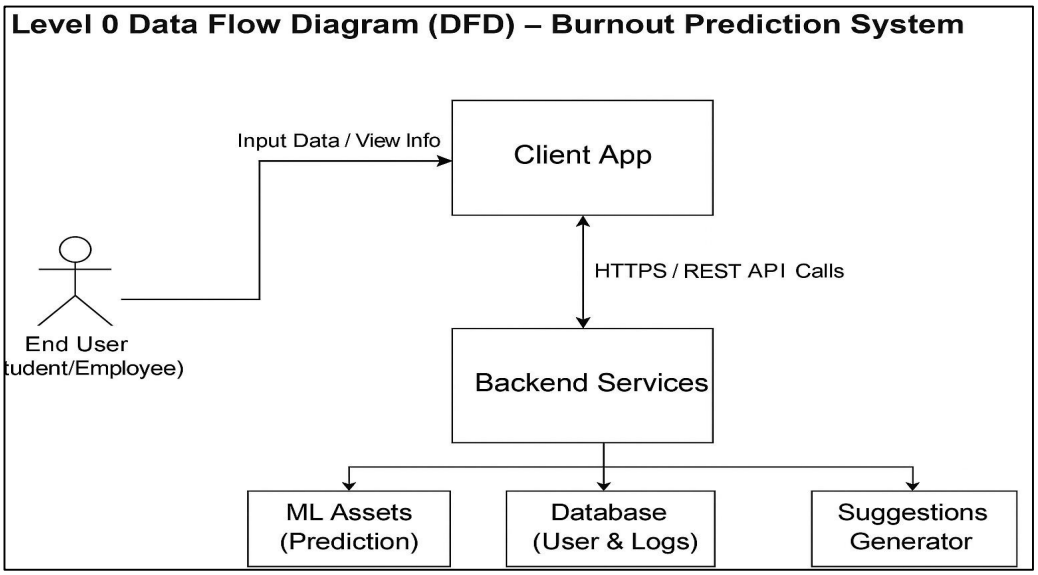

Figure-2 Illustrates Level 0 DFD

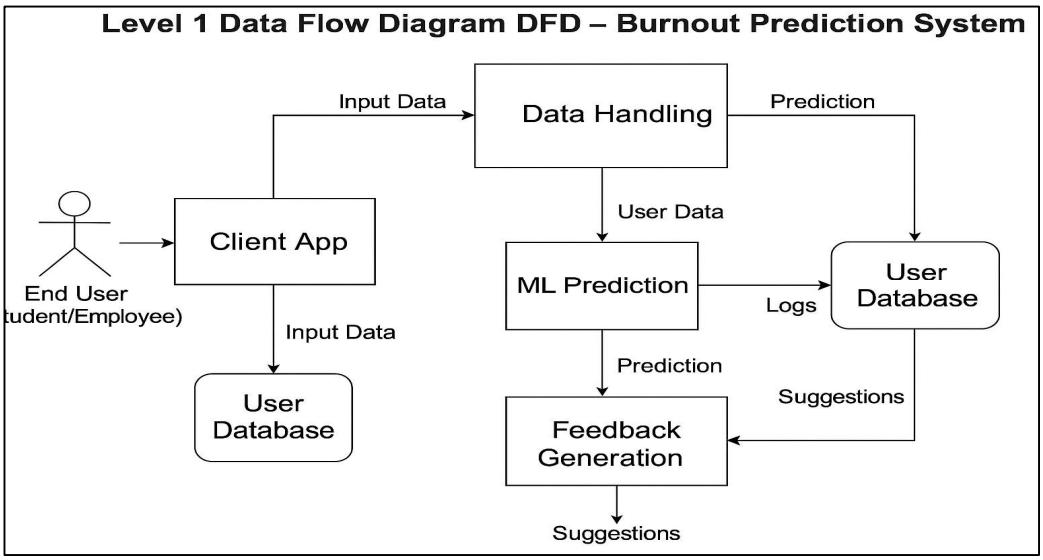

Figure-3 Illustrates Level 1 DFD

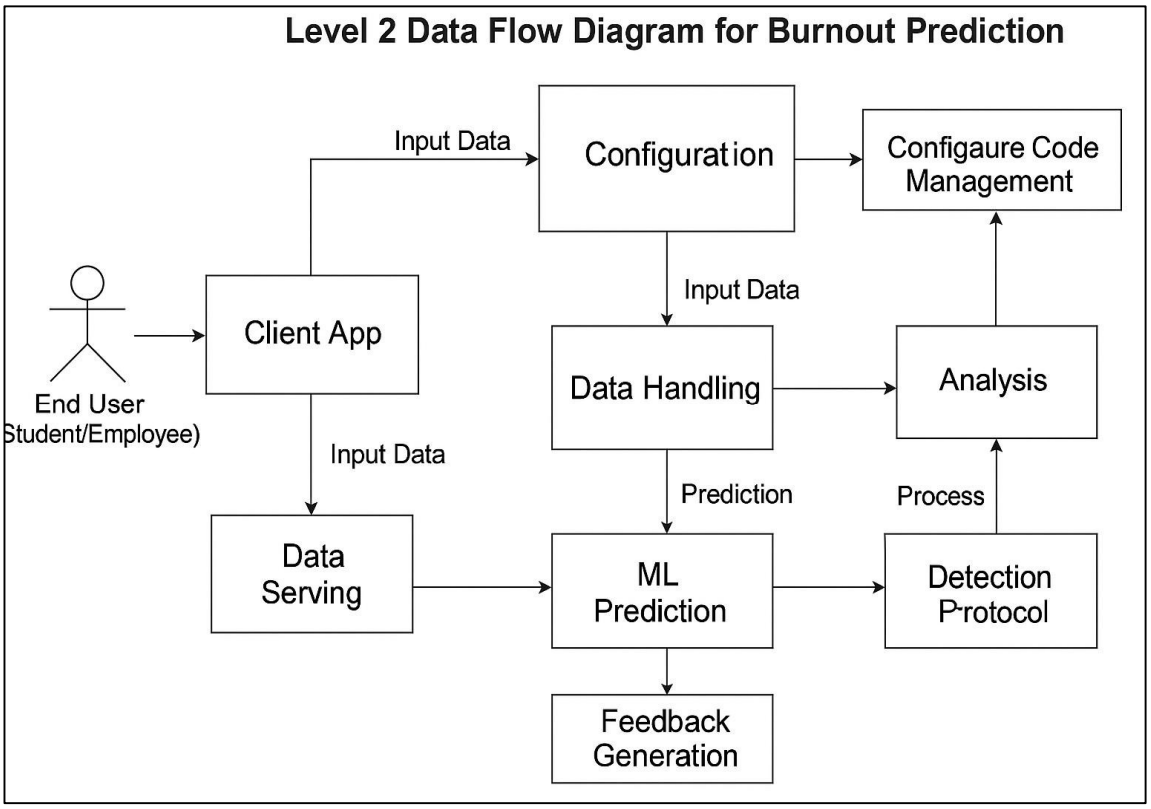

Figure-4 Illustrates Level 2 DFD

6. System Architecture Diagram

The system architecture diagram provides a high-level overview of the main components and data flow within the Stress Burnout Detection and Prevention System. It visually represents how different layers of the system—such as data acquisition, preprocessing, machine learning analysis, feedback, user interface, and storage—interact to support efficient detection and prevention of stress and burnout using machine learning techniques.

System Architecture Diagram

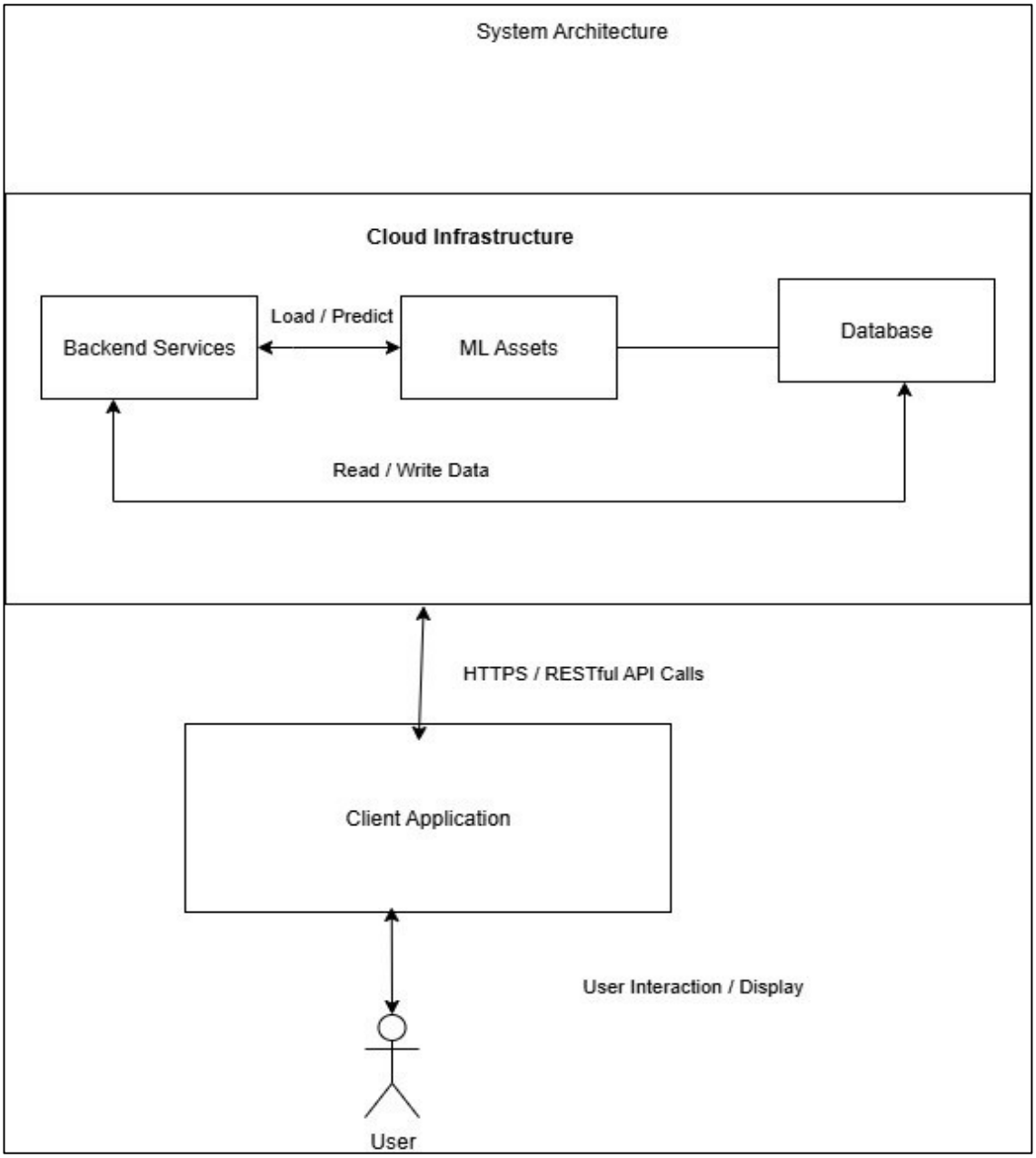

Figure-5 Illustrates System Architecture Design

8. Conclusion

This SRS document provides a detailed overview of the requirements for the Stress Burnout Detection and Prevention System, serving as a foundational guide for its development.

References

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