Software Requirements Specification (SRS)

Project: **MediAid AI** –(Smart Disease Prediction and Medical Suggestion System)

Group Members

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1. Introduction

1.1 Purpose of the Document

The purpose of this document is to define the functional and non-functional requirements for *MediAid AI*, an intelligent system designed to predict possible diseases based on user-provided symptoms and suggest medical tests or general remedies. This SRS will serve as a reference for developers, testers, and stakeholders to ensure the system is designed, implemented, and validated effectively.

1.2 Scope of the Project

MediAid AI is a smart health assistant that allows users to input symptoms and receive AI-driven predictions about possible diseases. It also suggests relevant diagnostic tests and over-the-counter medicines. The system is not a replacement for medical professionals but serves as an early-awareness tool for students and the general public. Key objectives:

- Provide quick and reliable symptom-based health insights.
- Reduce misinformation from random online searches.
- Deliver a simple, user-friendly interface for non-technical users.
- Encourage timely medical consultation by raising awareness.

1.3 Overview of the Software

MediAid AI will use a symptom–disease mapping model powered by machine learning/AI algorithms. The system will be deployed as a web or mobile application, accessible anytime and anywhere. It includes:

- Symptom input module for users.
- Disease prediction engine using AI.
- Medical suggestions module for tests and remedies.
- Educational disclaimer to remind users that this is not a doctor's diagnosis.

1.4 Document Conventions

- Functional requirements are listed as FR-x (e.g., FR-1, FR-2).
- Non-functional requirements are listed as NFR-x.
- UML diagrams are included in the appendices.

1.5 References

- IEEE 830-1998 Standard for Software Requirements Specifications.
- WHO resources on common diseases and symptoms.
- Academic journals on AI in healthcare.

2. Overall Description

2.1 Product Perspective

MediAid AI is a standalone system but may connect to external health databases in the future for better accuracy. It acts as an educational tool and personal health assistant.

2.2 Product Functions

- Accept symptom inputs from the user.
- Predict possible diseases using AI.
- Suggest diagnostic tests and general medicines.
- Provide health awareness tips.
- Display results in a simple, easy-to-understand interface.

2.4 Operating Environment

- Platform: Web and mobile app.
- OS: Windows, Android.
- Tools: Python, Flask or Fast API, React or Streamlit.

- Database: MySQL/PostgreSQL.

2.5 Design and Implementation Constraints

- Must not provide false assurance of being a replacement for doctors.
- Limited by available dataset accuracy.
- Internet connection required for AI model updates.

2.6 Assumptions and Dependencies

- Users have basic digital literacy to enter symptoms.
- System depends on a predefined dataset for disease predictions.
- External libraries (AI/ML frameworks like TensorFlow, Scikit-learn) will be available.

3. Specific Requirements

3.1 Functional Requirements

- FR-1: The system shall allow users to input symptoms.
- FR-2: The system shall predict possible diseases.
- FR-3: The system shall suggest diagnostic tests.
- FR-4: The system shall recommend general over-the-counter medicines.
- FR-5: The system shall display a disclaimer about not replacing a doctor.

3.2 Non-Functional Requirements

- NFR-1: Response time should be < 3 seconds per query.
- NFR-2: The system must handle at least 500 concurrent users.
- NFR-3: User interface must be simple and mobile-friendly.
- NFR-4: Data privacy must be maintained, with no personal data stored without consent.

3.3 External Interfaces

- User Interface: Web/mobile app for input and output.
- Database: Stores symptom–disease mapping.
- External APIs: Future integration with medical knowledge bases.

3.4 System Features

- Disease prediction.
- Medical suggestion.
- Symptom database management.
- Educational disclaimers.

3.5 Data Requirements

- Symptom dataset.
- Disease–symptom relationship mappings.
- Basic drug/test information.

3.6 Use Cases

Use Case 1: A user enters "fever, cough, headache".

- System predicts "Flu / Common Cold / COVID-19 (possible)".
- Suggests "COVID test, flu test, blood test".
- Recommends "paracetamol, hydration, rest".

4. System Features

(Expanded version of section 3.4 with detailed descriptions for each feature: input module, AI engine, suggestion engine, disclaimer system, etc.)

5. External Interface Requirements

- GUI interface for users.
- Database interface for backend.
- API interface for possible future integration.

6. Non-Functional Requirements

- Performance: Response < 3s, high availability.
- Security: Protect user data, encrypted communication.
- Usability: Easy navigation, minimal inputs.
- Reliability: 99% uptime.
- Scalability: Handle future growth in dataset and users.

- Legal: Must include disclaimers to avoid liability.

7. User Interface Requirements

- Clean, intuitive UI with simple forms.
- Navigation menu for symptoms, predictions, and suggestions.
- Results displayed in list format with easy-to-read tips.

8. Quality Attributes

- Reliability: Accurate predictions within dataset limits.
- Availability: Accessible 24/7.
- Scalability: Support more users and diseases over time.
- Maintainability: Modular code for easy updates.
- Portability: Works across devices and OS.

9. Constraints

- Dataset limitations may affect prediction accuracy.
- AI model may require retraining to remain relevant.
- Project limited by student resources and development timeline.

10. Assumptions and Dependencies

- Users will not treat system results as a final medical diagnosis.
- AI accuracy depends on training data quality.
- Requires internet for real-time prediction (if hosted online).

11. Appendices

- Use case diagrams.
- Data flow diagrams (DFD).
- Entity relationship diagrams (ERD).

12. Glossary

- AI (Artificial Intelligence): Machine learning techniques for prediction.
- Symptom: A physical or mental feature indicating possible illness.
- Over-the-counter medicine (OTC): Medicines available without prescription.