Software Requirements Specification (SRS)

AI-Powered Triage System

CS 3338 – Group

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Contents

1 Version Description

Version	Description	Date
0.1	Initial draft of SRS with core features and high-level description.	Nov 28, 2025
0.2	Added external interface requirements, legal/ethical considerations, and glossary.	Nov 29, 2025
1.0	Final SRS revision for CS 3338 submission.	Dec 11, 2025

Table 1: SRS Version Description

2 Introduction

2.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to describe the functional and non-functional requirements for the AI-Powered Triage System. This document will be updated at each snapshot checkpoint to reflect the latest progress and system enhancements.

2.2 Intended Audience

This document is intended for:

- The CS 3338 instructor and teaching staff, for grading and review.
- The development team, who will implement the AI-Powered Triage System.
- Future maintainers, who may extend or update the system and its requirements.

2.3 Scope

The system provides healthcare workers with a secure platform that includes:

- A user login system for verified healthcare staff.
- Access to patient demographic and visit history information.
- An AI assistant capable of reading patient records and summarizing relevant medical information.
- The ability to update and store new visit documentation.
- AI-assisted completion of post-visit forms using chat logs.

2.4 Definitions and Acronyms

- **AI** — Artificial Intelligence.
- **User** — Verified healthcare staff.
- **Database** — Storage for patient demographic and visit history.
- **Snapshot** — Project development milestone.

2.5 References

- CS 3338 Final Project Instructions (Canvas).
- HIPAA documentation (concept reference, not fully implemented).

2.6 Document Overview

This SRS includes:

- System description.
- Functional and non-functional requirements.
- External interface requirements.
- Legal and ethical considerations.
- Glossary and snapshot planning.

3 Overall Description

3.1 Product Perspective

The system is a web application composed of:

- A front-end website for interacting with patients and the AI.
- A secure login portal.
- A back-end API to manage data and AI connections.
- A database storing patient information.
- An AI model integrated to assist medical staff.

3.2 User Classes and Characteristics

- **Healthcare Staff**: Must be authenticated users; familiar with patient care workflow.
- **System Administrator**: Manages user permissions and system configuration.

3.3 Operating Environment

- Web browser (Chrome, Firefox, Safari, Edge).
- Backend server (e.g., Node.js or Python-based).
- Database (PostgreSQL or MySQL).

3.4 Design and Implementation Constraints

- Limited scope due to academic timeline.
- HIPAA compliance cannot be fully implemented.
- AI features must be explainable and safe.

3.5 Assumptions and Dependencies

- AI API availability.
- Stable internet connection for users.
- Valid healthcare employment verification.

4 External Interface Requirements

4.1 User Interface

The AI-Powered Triage System will be accessed through a secure web-based user interface:

- Users log in with verified healthcare credentials.
- The dashboard displays a list of patients, recent visits, and triage summaries.
- Forms allow users to add or update patient visit documentation.
- A chat-style interface allows users to communicate with the AI assistant.
- The interface will be responsive and usable on desktop and tablet devices.

4.2 Software Interfaces

The system will interact with other software components and services:

- A back-end REST API for creating, reading, updating, and deleting patient records.
- A database management system (e.g., PostgreSQL) that stores patient information and visit history.
- An AI model API (e.g., OpenAI or a similar provider) used to analyze patient data and generate summaries.
- Optional integration points for hospital systems (EHR/EMR) using secure API endpoints, if included in future work.

5 System Features

5.1 Feature F1: User Authentication

Description

Healthcare staff must log in to access patient data.

Functional Requirements

- F1.1 The system shall allow users to log in with a username and password.
- F1.2 The system shall validate user credentials securely.
- F1.3 The system shall restrict access for unauthorized users.
- F1.4 Login errors shall be displayed clearly.

5.2 Feature F2: Patient Record Management

Description

Users can view, search, and update patient records.

Functional Requirements

- F2.1 Users shall search for patients by name or ID.
- F2.2 Users shall view demographic info (name, age, gender).
- F2.3 Users shall view previous visit history.
- F2.4 Users shall add new medical visits to the patient record.
- F2.5 Users shall update existing visit notes.

5.3 Feature F3: AI-Assisted Triage

Description

An AI assistant helps summarize patient information and provide triage support.

Functional Requirements

- F3.1 The system shall provide an AI chat interface for staff.
- F3.2 The AI shall access patient history data.
- F3.3 The AI shall summarize previous conditions, treatments, and patterns.
- F3.4 The AI shall suggest severity indicators but not diagnose a condition.

5.4 Feature F4: Visit Documentation Assistance

Description

AI assists staff by generating post-visit documentation.

Functional Requirements

- F4.1 The system shall provide a structured visit form.
- F4.2 The AI shall extract useful information from chat logs.
- F4.3 Users shall edit AI-generated content before saving.
- F4.4 The final documentation shall be stored in the database.

6 Non-Functional Requirements

6.1 Performance

- NFR1: Pages shall load within 3 seconds on average.
- NFR2: AI responses shall generate within 5 seconds under normal conditions.

6.2 Security

- NFR3: All sensitive data must be encrypted.
- NFR4: Passwords shall be stored as secure hashes.
- NFR5: Only authenticated users may access patient records.

6.3 Usability

- NFR6: The user interface shall require minimal training for healthcare staff.
- NFR7: Information shall be presented clearly and consistently.

6.4 Reliability

- NFR8: The system shall handle at least 20 simultaneous users.
- NFR9: AI responses shall be monitored to avoid harmful medical claims.

7 Legal and Ethical Considerations

7.1 Data Storage and Privacy

- Patient data must be stored securely with access restricted to authorized healthcare staff.
- All data in transit between the user interface, back end, and AI service should be encrypted (e.g., HTTPS/TLS) in a production environment.
- The system should follow HIPAA-like principles for handling protected health information, even if full legal compliance is out of scope for this class project.
- Audit logs should track who accessed or modified patient records.

7.2 Legal and Ethical Issues

- Users must be informed that the AI assistant is a decision-support tool, not a replacement for medical judgment.
- Any AI-generated triage suggestion must be reviewed and confirmed by a qualified healthcare professional.
- Data used to train or evaluate the AI should be de-identified where possible to protect patient privacy.
- The team should consider bias in AI outputs and avoid using the system to make fully automated life-critical decisions.

8 Glossary

Acronym	**Definition**
AI	Artificial Intelligence.
UI	User Interface.
API	Application Programming Interface.
DB	Database that stores patient and visit data.
SRS	Software Requirements Specification.
SDD	Software Design Document.

Table 2: Glossary of Acronyms

9 Snapshots (Planned Updates)

9.1 Snapshot 1

- Establish project scope.
- Build initial SRS and SDD structure.
- Create basic repository structure.
- Begin login system outline.

9.2 Snapshot 2

- Implement database structure.
- Connect UI to database.
- Add TestRail testing document for this feature.
- Update SRS with new requirements.

9.3 Snapshot 3

- Implement AI assistant feature.
- Connect AI to patient record database.
- Add TestRail document for AI testing.
- Update SRS requirements.

9.4 Snapshot 4

- Finalize UI and polish system.
- Add future enhancement section.
- Add TestRail document for UI workflow.
- Prepare final SRS revision.

10 Appendix

This document will be updated at each snapshot stage to reflect the current state of the AI-Powered Triage System and its requirements.