Requirements Gathering

# 1. Stakeholder Analysis

1. Healthcare Professionals (Doctors, Nurses, and Medical Staff): They will interact with the system for extracting medical information from clinical notes.  
   • Needs: Quick, accurate extraction of health-related data such as diagnoses, treatments, and medications. User-friendly interface to make interaction efficient
2. Healthcare Institutions (Hospitals, Clinics): Administrators, system maintainers, and data managers.  
   • Needs: A reliable system for extracting and managing patient data from large volumes of unstructured clinical notes. Security of patient data is a priority.
3. Patients: They may not directly interact with the system but will benefit from improved healthcare through accurate data extraction.  
   • Needs: Ensuring that their health information is handled securely and that errors in diagnosis or treatment are minimized through better data extraction.
4. Software Developers & Data Scientists: The team responsible for building and maintaining the system.  
   • Needs: Clear guidelines for system functionalities, integration with existing tools, and flexibility to train the system on new medical data.

# 2. User Stories & Use Cases

## • User Story 1

As a doctor, I want the system to automatically extract diagnoses and medications from clinical notes so that I can make faster, more accurate treatment decisions.  
• Acceptance Criteria:  
 - The system can accurately identify diagnoses and medications from the provided text.  
 - Extracted data is displayed in an easy-to-read format.  
 - The doctor can edit the extracted data if needed.

## • Use Case 1: Extract Diagnosis Information from Clinical Notes

• Actor: Doctor  
• Preconditions: Clinical note has been input into the system.  
• Flow of Events:  
 1. The doctor uploads a new clinical note into the system.  
 2. The system processes the text and identifies relevant health information.  
 3. The system highlights the extracted diagnoses and medications.  
 4. The doctor reviews and confirms the extracted data.  
 5. The system stores the extracted data in the database.

# 3. Functional Requirements

1. \*\*Text Extraction:\*\*  
 - The system should automatically extract health-related entities (diagnoses, medications, allergies, etc.) from unstructured clinical notes.  
  
2. \*\*User Interface:\*\*  
 - The system should have an intuitive, user-friendly interface to allow healthcare professionals to review and edit extracted data.  
  
3. \*\*Data Integration:\*\*  
 - The system should integrate with hospital Electronic Health Records (EHR) to retrieve patient data and update medical records.  
  
4. \*\*Reporting:\*\*  
 - The system should generate reports summarizing extracted medical information for further analysis or decision-making.  
  
5. \*\*Error Handling:\*\*  
 - The system should flag any inconsistencies or uncertainties in extracted data and allow users to verify or edit the information.

# 4. Non-functional Requirements

## • Performance

The system should process clinical notes and return extracted data within \*\*5 seconds\*\* for files containing up to \*\*5000 words\*\*.

## • Security

The system must ensure \*\*data encryption\*\* at rest and during transmission to protect sensitive medical data.  
Access to data must be restricted based on user roles, ensuring that only authorized personnel can access certain types of data.

## • Usability

The user interface should be designed to minimize cognitive load and be easy to navigate for medical professionals, even those with limited technical expertise.  
Support for multiple languages and medical terminologies is required.

## • Reliability

The system should maintain \*\*99.9% uptime\*\* to ensure it is available for healthcare professionals at all times.  
The system should be fault-tolerant and handle errors gracefully without losing data or crashing.