Project Documentation – Medical Diagnosis Recommendation System

1. Project Planning

1.1 Project Overview

The Medical Diagnosis Recommendation System is an AI-powered platform designed to assist doctors in analyzing patient data and suggesting the most probable diseases based on symptoms, medical history, and lab results. The goal is to enhance diagnostic accuracy and reduce the time needed for clinical decision-making.

1.2 Project Scope

In Scope:

- - Medical dataset preparation
  - Data cleaning and preprocessing
  - AI model development for disease prediction
  - Web-based interface for doctors
  - Dashboards and alerts for critical cases

Out of Scope:

- - Final medical diagnosis (recommendation only)
  - Medication recommendation
  - Integration with electronic medical records

1.3 Project Deliverables

- - Cleaned medical dataset
  - ERD and database schema
  - Stakeholder analysis
  - UI/UX design
  - Machine learning model
  - Web platform and dashboards
  - Full project documentation

1.4 Project Timeline

Milestone	Description	Deliverables
M1	Data Collection & System Design	Dataset + ERD
M2	Model Development	Model + Evaluation
M3	Deployment & Visualization	Web Tool + Dashboards

2. Stakeholder Analysis

Stakeholder	Role	Needs	Impact
Doctors	Primary Users	Accurate and fast recommendations	High
Patients	Indirect Stakeholders	Better diagnostic outcomes	Medium
Project Team	Development	Clear requirements + clean data	High
Project Leader	Management	Team coordination and delivery	High
Ministry	Sponsors	High-quality final project	High

3. Database Design

3.1 ERD Description

Key Tables:

Patients: patient_id, name, age, gender, medical_history
Symptoms: symptom_id, symptom_name, severity_level
Patient_Symptoms: id, patient_id, symptom_id, severity
Lab_Results: lab_id, patient_id, test_type, value, normal_range
Predictions: prediction_id, patient_id, predicted_disease, probability, model_version

3.2 ERD Structure (Text Description)

Patients (1) —— (M) Patient_Symptoms —— (M) Symptoms
Patients (1) —— (M) Lab_Results
Patients (1) —— (M) Predictions

4. UI/UX Design

4.1 User Personas

Persona 1: Dr. Ahmed – General Practitioner
- Age: 38
- Needs: Simple interface, clear recommendations
- Pain Points: High workload and manual symptom analysis

Persona 2: Dr. Sarah – Specialist
- Age: 45
- Needs: Explainability for each prediction
- Pain Points: Requires trustworthy AI reasoning

4.2 User Journey

1. Doctor logs into the system.
2. Enters patient data.
3. System processes inputs and sends data to the model.
4. Results and top disease probabilities are displayed.
5. Critical alerts are shown if needed.

4.3 Wireframe Descriptions

1. Data Input Page: fields for patient info, symptoms, lab results.
2. Results Page: top predictions, probability bars, feature importance chart.
3. Dashboard: statistics, accuracy metrics, case summaries.