Project Charter

A. General Information

Project Title:	A Health Risk Analytics Platform		
Brief Project Description:	We are building a web-based service for organizations, using synthetic EHR data from Synthea for model development to predict risks of diabetes, heart disease, lung cancer, breast cancer, and kidney disease. The platform provides interactive risk-level dashboards to encourage preventive healthcare measures and enables users to book medical appointments after reviewing their risk assessments.		
Prepared By:	GROUP 16		
Date:	January 29, 2024	***Version:***	1

B. Project Objective:

Explain the specific objectives of the project. For example: What value does this project add to the organization? How does this project align with the strategic priorities of the organization? What results are expected? What are the deliverables? What benefits will be realized? What problems will be resolved?

Value to Organization: Monetize preventive healthcare analytics by offering a prototype service to clients.
Strategic Alignment: Supports organizational goals of expanding into AI-driven healthcare solutions.
Expected Results:

- Using Synthea EHR dataset (10,000+ records).
- ML models with ≥85% accuracy for 5 diseases.
- Making dashboard Interactive for risk visualization.
- Mock doctor directory and appointment booking.

Deliverables: Functional web app, validated models, user-friendly UI, and API.
Benefits: Improved user engagement, reducing healthcare cost because of early risk detection.
Problems Resolved: Lack of accessible tools for proactive disease risk assessment.

C. Assumptions

List and describe the assumptions made in the decision to charter this project. Please note that all assumptions must be validated to ensure that the project stays on schedule and on budget.

- The models trained on synthetic data will provide meaningful insights into risk levels for diabetes, heart disease, lung cancer, breast cancer, and kidney disease, even though the project is not operating at an industrial scale.
- The demonstration of risk-level dashboards and an appointment booking prototype will be considered sufficient for academic requirements, without needing real-world clinical integration.
- The project can be completed within the semester or academic year allocated for the MRP, considering student course loads and other commitments.
- We, as students, either already possess or can promptly acquire the necessary technical and domain knowledge to effectively design, implement, and evaluate the solution within the given academic timeline

Project Charter

D. Project Scope

Describe the scope of the project. The project scope establishes the boundaries of the project. It identifies the limits of the project and defines the deliverables.
List any requirements that are specifically excluded from the scope.

Synthetic Data Generation & Preprocessing
Utilize tools like Synthea to create representative synthetic EHR data.
Clean, structure, and standardize the data for subsequent model training.
Disease Risk Prediction (5 Conditions)
Build and train machine learning models that categorize each user's risk (Low, Moderate, High) for diabetes, heart disease, lung cancer, breast cancer, and kidney disease.
Interactive Dashboard & Visualizations
Provide a user-friendly interface displaying risk trends over time and relevant comparisons.
Use charts and other visual elements to clarify risk levels and key factors influencing predictions.
Mock Doctor Directory
Maintain a searchable directory of healthcare professionals, filterable by specialty and geographic location.
Include basic contact information or links for booking appointments within the prototype.

E. Project Milestones

List the project's major milestones and deliverables.
.

Milestones	Date
Trained ML models	Feb 26
Functional API	Mar 15
Dashboard prototype	Apr 5
testing	Apr 26
Final deployment & handover	May 3

Project Charter

F. Roles and Responsibilities

Describe the roles and responsibilities of project team members followed by the names and contact information for those filling the roles. The table below gives some generic descriptions. Modify, overwrite, and add to these examples to accurately describe the roles and responsibilities for this project.

Project Manager: Leads in the planning and development of the project; manages the project to scope. Responsibilities include develop the project plan; identify project deliverables; identify risks and develop risk management plan; direct the project resources (team members); scope control and change management; oversee quality assurance of the project management process; maintain all documentation including the project plan; report and forecast project status; resolve conflicts within the project or between cross-functional teams; ensure that the project's product meets the business objectives; and communicate project status to stakeholders.	
Name	**Email / Phone**
Achyuth kumar thalloju	achyuthkumar.thalloju@slu.edu
Team Member: Works toward the deliverables of the project. Responsibilities include: understand the work to be completed; complete research, data gathering, analysis, and documentation as outlined in the project plan; inform the project manager of issues, scope changes, and risk and quality concerns; proactively communicate status; and manage expectations.	
Name	**Email / Phone**
Sahith pidugu	sahith.pidugu@slu.edu
Sridharan kairamkonda	sridharan.kairamkonda@slu.edu
Customer: The person or department requesting the delivery. Responsibilities include partner with the sponsor or project manager to create the Project Charter; partner with the project manager to manage the project including the timeline, work plan, testing, resources, training, and documentation of procedures; work with the project team to identify the technical approach to be used and the deliverables to be furnished at the completion of the project; provide a clear definition of the business objective; sign-off on project deliverables; take ownership of the developed process and software.	
Name	**Email / Phone**
Mohammed Salman	mohammed.salman.2@slu.edu
Subject Matter Expert: Provides expertise on a specific subject. Responsibilities include: maintain up-to-date experience and knowledge on the subject matter; and provide advice on what is critical to the performance of a project task and what is nice-to-know.	
Name	**Email / Phone**
Seema Randhawa	Seema.randhawa@slu.edu

Project Charter

I. Project Risks

Identify the high-level project risks and the strategies to mitigate them.

Risks	Mitigation strategies
Data Quality Issues	-Perform thorough data validation (checking distributions, missing values). -Continuously refine Synthea's configuration to generate more representative or balanced datasets. - Document data assumptions and cleaning steps.
Overfitting or Underfitting of Models	Use cross-validation and proper hyperparameter tuning. - Regularly evaluate performance using independent test sets (synthetic) - Implement early stopping criteria to avoid overfitting.
Knowledge Gaps	- Seek mentorship from faculty or domain experts. - Utilize online tutorials, workshops, and university resources to acquire needed skills.
Integration Delays (Frontend & Backend)	- Define clear API contracts (data formats, endpoints) before development. - Conduct regular integration checkpoints. - Use automated tests to detect and fix incompatibility quickly.
End-User Expectations	-Making sure, team stands up with the work and delivers the expected output.
Changing Requirements	- Clearly define project goals in a charter or scope document. - Set a change control process: any new feature requires team review and approval. - Maintain a prioritized backlog and timebox development sprints.

J. Success Metrics

Predictive Accuracy & Reliability
Model Performance Indicators: Track metrics like *Accuracy*, *Precision*, *Recall*, *F1-score*, and *ROC-AUC* for each targeted disease.
Measure how well predicted probabilities align with actual risk categories.

User Engagement & Satisfaction
User Testing Feedback: Collect qualitative feedback (surveys, interviews) on ease of navigation, clarity of risk display, and perceived utility.
Time on Task: Observe how quickly users can interpret the dashboards or book appointments.

System Performance & Responsiveness
Load/Response Times: Ensure the application remains responsive under typical usage conditions (e.g. loading dashboards, fetching model results).
Scalability: Check that the prototype can handle an increased number of simultaneous users without performance degradation.

Project Management & Timeline
Milestone Completion Rate: Track whether each scheduled phase (data prep, model training, UI development, testing) finishes on time.

Quality Standards
Deliverable Checklists: Confirm each "in-scope" item (model training, risk categories, dashboard, doctor directory) is completed.
Quality Assurance: Count and resolve any significant bugs or usability issues found during testing.

Project Charter

K. Signatures

The signatures of the people below document approval of the formal Project Charter. The project manager is empowered by this charter to proceed with the project as outlined in the charter.

Customer:		
Name	**Signature**	**Date**
Mohammed Salman	Mohammed Salman	
Project Manager:		
Name	**Signature**	**Date**
Achyuth kumar thalloju	Achyuth kumar thalloju	