Project Title:

Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Advanced Machine Learning Techniques

Team Name:

LiverGuardiansML

Team Members:

1.)Shaik Hazara

2.)Sangireddy Mohana Ravali

3.)Sambangi Asha Jyothi

4.)Sandhya Amruthula

Phase-1: Brainstorming & Ideation

Objective:

\*Identifying the problem statement.

\*Defining the purpose and impact of the project.

Key Points:

1.Problem Statement:

High mortality rates due to late detection of liver cirrhosis,a chronic liver disease.

2.Proposed Solution:

Develop a machine learning model to predict liver cirrhosis using patient data (e.g., blood tests, imaging).

3.Target Users:

Healthcare providers, hospitals, and patients at risk.

4.Expected Outcome:

Early detection tool to improve patient outcomes and reduce healthcare costs.

Phase-2: Requirement Analysis

Objective:

\*Define technical and functional requirements.

Key Points:

1.Technical Requirements: (Languages, frameworks, tools):

Python, TensorFlow, Scikit-learn, Pandas, healthcare APIs.

2.Functional Requirements: (Features the project must have):

Accurate cirrhosis prediction, user-friendly interface, data visualization.

3.Constraints & Challenges: (Any limitations or risks):

Limited access to diverse patient datasets, ensuring model accuracy with imbalanced data.

Phase-3: Project Design

Objective:

\*Create the architecture and user flow.

Key Points:

1.System Architecture Diagram: (Simple sketch or flowchart):

Data input → Preprocessing → ML Model → Prediction Output → UI Display.

2.User Flow: (How a user will interact with the project):

User uploads patient data → System processes and predicts → Results displayed with confidence score.

3.UI/UX Considerations: (If applicable, wireframe or basic layout):

Simple dashboard with input fields and result graphs (wireframe to be designed).

Phase-4: Project Planning (Agile Methodologies)

Objective:

\*Break down the tasks using Agile methodologies.

Key Points:

1.Sprint Planning (Dividing work into tasks for each team member) and 2.Task Allocation:

Data collection and Model building :Sambangi Asha Jyothi

Data preparation and Performance Testing:Shaik Hazara

Descriptive statistical: Sandhya Amruthula

Visual Analysis: Sangireddy Mohana Ravali

2.Timeline and Milestones:

Data collection: 1 week

Model training: 2 weeks

UI integration: 1 week.

Phase-5: Project Development

Objective:

\*Code the project and integrate components.

Key Points:

1.Technology Stack Used (List of programming languages, APIs, etc.):

Python, TensorFlow, Flask (for API), Matplotlib.

2.Development Process (Steps followed for coding):

Data cleaning → Model training → API integration → UI linking.

3.Challenges & Fixes: (Mention any obstacles faced and how they were solved):

Data imbalance fixed with SMOTE oversampling; API latency reduced by optimization.

Phase-6: Functional & Performance Testing

Objective:

\*Ensuring the project works as expected.

Key Points:

1.Test Cases Executed (Listing the scenarios tested):

\* Accuracy with sample data

\*Response time

\*UI functionality.

2.Bug Fixes & Improvements (Mention fixes made):

\*Fixed model overfitting with regularization;

\*improved UI load time.

3.Final Validation (Does the project meet the initial requirements?):

Yes, meets accuracy and usability goals.

4.Deployment (If applicable; Hosting details or final demo link):

Demo link is shared post-testing.