Project Design Phase
Proposed Solution Template

Date	15 February 2025
Team ID	LTVIP2025TMID42458
Project Name	Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Liver disease is a significant health concern worldwide, especially in countries like India. Early diagnosis is crucial, but manual diagnosis is time-consuming, expensive, and prone to human error. There is a need for an intelligent system that can accurately and quickly predict liver disease using patient data.
2.	Idea / Solution description	The project aims to build a machine learning-based web application that predicts whether a patient is likely to have liver disease based on clinical features like age, gender, bilirubin levels, enzymes, and protein ratios. The model is trained on historical medical data and integrated into a user-friendly Flask-based interface for real-time prediction.
3.	Novelty / Uniqueness	Unlike general-purpose healthcare models, this project specifically targets **liver disease**, focusing on domain-specific features. It provides **instant, AI-driven diagnosis**, reducing dependency on lab reports. The model is lightweight and can be **hosted locally or on the cloud**, making it accessible to clinics and rural health centers. It also has the potential to be extended with **real-time patient monitoring** and **mobile integration**.
4.	Social Impact / Customer Satisfaction	**Early diagnosis saves lives** by allowing for quicker medical intervention. **Affordable and accessible tool** for rural healthcare workers and small clinics Reduces **patient wait time** and minimizes diagnostic errors.

		Can be used for **awareness and health screening campaigns**, improving public health outcomes.
5.	Business Model (Revenue Model)	**Freemium Model**: Basic version free for clinics and individuals, with a paid premium version offering advanced analytics, historical tracking, and integration with EHR systems. **Subscription-based SaaS** for hospitals and diagnostic centers. **White-label solutions** for telemedicine apps or insurance companies. **Data analytics services** for health organizations or pharma research.
6.	Scalability of the Solution	The model can be scaled by training it with more diverse and larger datasets to improve generalization. Can be deployed as a **cloud-based API** for easy integration across platforms (web, mobile, EHR systems). Additional modules for **other liver-related diseases** (e.g., hepatitis, cirrhosis stages) can be added. Supports **multi-language and regional customization** to expand across different geographies.