Project Design Phase
Proposed Solution Template

Date	22 June 2025
Team ID	LTVIP2025TMID41434
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 cirrhosis is often diagnosed at advanced stages due to the lack of early symptoms. Delayed diagnosis leads to complications, expensive treatment, and high mortality. Early detection is essential to improve patient outcomes and reduce the burden on healthcare systems.
2.	Idea / Solution description	This project proposes a machine learning-based predictive system that uses clinical and lifestyle data to detect the risk of liver cirrhosis. By training various ML models on a real-world healthcare dataset, the system can predict the likelihood of liver damage with high accuracy. The best-performing model is integrated into a Flask web application for user-friendly predictions by healthcare providers.
3.	Novelty / Uniqueness	Unlike traditional diagnostic methods, this solution leverages machine learning for non-invasive, data-driven, early prediction. It integrates multiple clinical parameters and lifestyle features, applies advanced preprocessing techniques, and identifies the most accurate algorithm through performance comparison.
4.	Social Impact / Customer Satisfaction	Early detection helps in timely treatment, preventing complications and improving survival rates. This tool empowers doctors with decision support and makes healthcare more proactive and personalized, improving patient satisfaction and trust.
5.	Business Model (Revenue Model)	The solution can be licensed to hospitals, clinics, and diagnostic centers as a SaaS (Software as a Service). Additionally, it can be offered as an API for integration into electronic health records (EHR) systems. A freemium model can be used

		where basic prediction is free, and advanced analytics are paid.
6.	Scalability of the Solution	The model can be scaled to include other liver conditions or broader hepatology diagnostics. It can also be adapted for mobile applications, multi-language support, and integration into national healthcare systems using cloud-based deployment.