# Project Design Phase

# Proposed Solution Template

| Date | 29-06-2025 |
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| Team ID | LTVIP2025TMID39531 |
| 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 frequently identified at an advanced stage because of the lack of early symptoms and the unavailability of effective predictive tools. Traditional methods for early detection are often time-consuming and resource-intensive, particularly in underserved healthcare systems. |
| 2. | Idea / Solution description | The proposed solution leverages a machine learning model trained on comprehensive medical datasets to predict liver cirrhosis risk based on key clinical parameters including hemoglobin levels, albumin concentrations, blood pressure readings, and other relevant biomarkers. This predictive system integrates seamlessly into an intuitive Flask-based web application designed for healthcare practitioners in resource-limited settings, enabling them to input patient health metrics and receive real-time, actionable risk assessments with clear clinical implications. |
| 3. | Novelty / Uniqueness | Uses ML to automate and accelerate the diagnostic process.<br>- Web app makes it accessible to any clinic with internet access.<br>- Can work with commonly available patient data (no invasive tests needed).<br>- Supports early intervention before serious symptoms appear. |

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| 4. | Social Impact / Customer Satisfaction | Helps save lives by enabling early detection. - Reduces cost and time for both patients and healthcare providers.<br>-       Increases diagnosis rate in rural or lowresource areas.<br>-       Boosts trust in technology-based healthcare support. |
| 5. | Business Model (Revenue Model) | Free basic model for public hospitals or NGOs. - Premium version for private hospitals with added analytics & reporting.<br>-       Can be licensed to diagnostic labs or health startups.<br>-       Custom integration options for EMR (Electronic Medical Records) providers. |
| 6. | Scalability of the Solution | The solution can be scaled to include more liver-related diseases.<br>-       Can be adapted to support other chronic conditions with new datasets.<br>-       Cloud deployment allows multiple hospitals to use it simultaneously.<br>-       Multilingual UI and mobile app version can be developed. |