**Project Design Phase**

**Proposed Solution**

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID36031 |
| Project Name | **Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques** |
| Maximum Marks | 2 Marks |

**Proposed Solution:**

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Liver cirrhosis is often detected at later stages due to limited awareness, delayed diagnosis, and lack of AI-based decision support tools in primary care. Early detection remains a challenge, especially in rural and resource-limited settings. |
|  | Idea / Solution description | LiverCare AI is a machine learning–powered web application that predicts the risk of liver cirrhosis based on patient lab data. It provides real-time risk assessment using XGBoost models and offers an intuitive interface for both medical professionals and patients. |
|  | Novelty / Uniqueness | Unlike generic health predictors, LiverCare AI is focused specifically on liver cirrhosis using a medically-relevant dataset, predictive accuracy with XGBoost, and a visual risk-based output. It combines explainable AI, medical usability, and a responsive web interface. |
|  | Social Impact / Customer Satisfaction | The tool promotes early diagnosis, reduces preventable liver complications, and improves public health awareness. It empowers primary care physicians and patients, leading to timely treatment and potentially saving lives. |
|  | Business Model (Revenue Model) | Freemium model: basic prediction tool is free; premium features (PDF reports, EMR integration, analytics dashboard) offered to clinics/hospitals on subscription or licensing basis. Can also be used in telemedicine platforms. |
|  | Scalability of the Solution | Easily scalable to other liver conditions or chronic diseases (like diabetes or kidney disease) using similar model pipelines. Can also be adapted for mobile app deployment or integrated into hospital management systems. |