

Ideation Phase

Brainstorm & Idea Prioritization

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

Date: 28 June 2025

Team ID: LTVIP2025TMID41166

Maximum Marks: 4 Marks

Brainstorm & Idea Prioritization :

This brainstorming session focuses on identifying innovative solutions for early detection of liver cirrhosis using ML. A collaborative and creative approach was adopted to list and prioritize ideas that can transform liver diagnostics.

Step 1: Team Gathering, Collaboration, and Problem Statement Selection

- **Problem Statement:**
Delayed diagnosis of liver cirrhosis leads to late-stage complications, high treatment costs, and increased mortality. There is a need for a non-invasive, accurate prediction system that can identify at-risk patients early using clinical data.
 - **Objective:**
To build an ML-based liver cirrhosis prediction system trained on real-world patient datasets for early, accessible, and efficient diagnosis.
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Step 2: Brainstorming – Idea Listing and Grouping

- Use clinical datasets (e.g., Indian Liver Patient Dataset - ILPD) • Data preprocessing: missing value handling, normalization, encoding
- Model training using:
 - Logistic Regression ○
 - Random Forest ○
 - XGBoost ○
 - SVM, KNN,
 - Naive Bayes
- Performance metrics: ○ Accuracy ○ Precision & Recall ○ F1-Score ○ ROC-AUC
- Group features by importance:

- Bilirubin levels ○
- Enzymes (SGPT, SGOT) ○
- Albumin and Globulin
- Ratio

Step 3: Idea Prioritization

Idea	Impact	Feasibility	Priority
Random Forest model	High	High	
XGBoost model	High	Medium	
Deploy via Streamlit web app	Medium	High	
Extend to real-time hospital integration	Very High	Medium	
Combine with liver imaging data	Very High	Low (R&D stage)	



