Project Design Phase

Solution Architecture

Date	27-06-2025
Team ID	LTVIP2025TMID42872
Project Name	Revolutionizing Liver Care: Predicting Liver Cirrhosis using Advanced Machine Learning Techniques
Maximum Marks	4 Marks

Solution Architecture:

User Interface (Frontend)

- A web-based form (HTML + Bootstrap) for doctors or users to input patient data.
- Fields like age, alcohol use, liver enzyme levels, etc.

Web Server (Flask Backend)

- Receives data from the frontend.
- Loads the trained machine learning model (model.pkl) and normalizer (scaler.pkl).
- Preprocesses input data (scaling, reshaping).

Machine Learning Model

- Predicts the risk of liver cirrhosis using a trained Random Forest or XGBoost model.
- Gives binary output: likely or unlikely to have cirrhosis.

Response Handling

- The result is returned to the user through the same web page with a prediction message.

Storage (optional)

- Can be extended to store patient input data and results in a database for future tracking or audits.

User Input (HTML Form)
↓
Flask Backend (app.py)
↓
Scaler → Machine Learning Model (model.pkl)
↓
Prediction (Likely/Unlikely Cirrhosis)
↓
Result Displayed on Web Interface