Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	21 JUNE 2025
Team ID	LTVIP2025TMID33932
Project Name	Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Acquisition	- Collect liver patient data from open datasets (e.g., Kaggle, UCI) - Gather clinical attributes like bilirubin, albumin, INR, etc.
FR-2	Data Preprocessing	- Handle missing values and outliers - Normalize and standardize features - Encode categorical variables
FR-3	Liver Cirrhosis Prediction Model	- Train ML model using historical liver patient data - Apply cross-validation and hyperparameter tuning
FR-4	Prediction API / Dashboard Interface	- Expose liver cirrhosis prediction via API - Visualize patient risk levels on user-friendly dashboards
FR-5	Clinical Decision Support System (CDSS)	- Generate insights and alerts for early diagnosis - Assist healthcare professionals in treatment planning
FR-6	System Monitoring and Model Retraining	- Track model performance with new patient data - Enable scheduled retraining to maintain accuracy

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Intuitive and accessible UI for doctors, healthcare staff, and researchers
NFR-2	**Security**	Secure handling of patient data with encryption, authentication, and role-based access control
NFR-3	**Reliability**	Consistent prediction accuracy and stable system performance in clinical settings
NFR-4	**Performance**	Prediction results delivered within 2 seconds for uploaded patient data
NFR-5	**Availability**	System operational 24/7 for continuous usage in healthcare facilities
NFR-6	**Scalability**	Capable of managing growing patient data and supporting multiple hospitals/clinics simultaneously