**Project Design Phase-II**

**Solution Requirements (Functional & Non-functional)**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID33878 |
| 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.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | Patient Data Input | Upload clinical/lab test reports (CSV, Excel, or manual form)  Data validation and preprocessing |
| FR-2 | |  | | --- | |  |  |  | | --- | | Machine Learning Model Prediction | | |  | | --- | | Input processed data into ML model |  |  | | --- | |  |  |  | | --- | | Return prediction results with confidence score | |
| FR-3 | |  | | --- | |  |  |  | | --- | | Visualization of Results | | Display prediction status (Cirrhosis Risk: High/Medium/Low)  Show key contributing features (e.g., bilirubin, albumin) |
| FR-4 | Report Generation | Generate downloadable patient report with diagnosis  Include recommendations or next steps |
| FR-5 | User Roles Management | Roles for Doctor, Lab Technician, and Admin  Role-based access control (RBAC) |
| FR-6 | History and Tracking | Maintain history of predictions per patient  Maintain history of predictions per patient |

**Non-functional Requirements:**

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

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| --- | --- | --- |
| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | Usability | |  | | --- | |  |  |  | | --- | | Simple and intuitive UI for doctors and technicians | |
| NFR-2 | Security | |  | | --- | |  |  |  | | --- | | Secure handling of medical data using encryption and authentication | |
| NFR-3 | Reliability | High accuracy and consistency of predictions from the ML model |
| NFR-4 | Performance | |  | | --- | |  |  |  | | --- | | Fast processing and prediction response time (< 3 seconds) | |
| NFR-5 | Availability | System uptime > 99% with fallback for offline predictions |
| NFR-6 | Scalability | Support for scaling with growing patient data and model improvements |