**Project Design Phase-II**

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

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| --- | --- |
| Date | 26 June 2025 |
| Team ID | SRGECVIP20251570 |
| Project Name | Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| --- | --- | --- |
| **FR-1** | **User Registration** | **- Registration through Form - Registration via Gmail - Registration via LinkedIn** |
| **FR-2** | **User Confirmation** | **- Confirmation via Email - Confirmation via OTP** |
| **FR-3** | **Patient Data Submission** | **- Input clinical features (e.g. Age, ALT, AST, Platelet count) - Validate required fields - Upload CSV option** |
| **FR-4** | **ML-Based Risk Prediction** | **- Submit data to ML model - Display liver cirrhosis risk score - Visualize key features using SHAP** |
| **FR-5** | **Prediction History** | **- Save prediction results for each user - View past predictions** |
| **FR-6** | **Feedback Collection** | **- Allow user to rate prediction accuracy - Submit feedback for improvement** |
| **FR-7** | **Admin Dashboard (Optional)** | **- View usage analytics - Monitor model performance - Manage users** |

**Non-functional Requirements:**

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

| **NFR No.** | **Non-Functional Requirement** | **Description** |
| --- | --- | --- |
| NFR-1 | Usability | The web interface will be user-friendly, intuitive, and accessible to healthcare professionals with minimal training. |
| NFR-2 | Security | The system will use HTTPS, JWT-based authentication, and secure storage to protect patient data and access controls. |
| NFR-3 | Reliability | The ML prediction service and web app will provide consistent and accurate outputs with 99% uptime during clinic hours. |
| NFR-4 | Performance | The application will return predictions in under 2 seconds per request for a standard patient input. |
| NFR-5 | Availability | The system will be available 24/7 with cloud deployment, load balancing, and automatic failover to minimize downtime. |
| NFR-6 | Scalability | The architecture supports horizontal scaling to handle increasing user and data loads across clinics and hospitals. |