**Project Design Phase-II**

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

|  |  |
| --- | --- |
| Date | 01 July 2025 |
| Team ID | LTVIP2025TMID40229 |
| Project Name | Hematovision |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

|  |  |  |
| --- | --- | --- |
| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | Interface should be simple and intuitive for nontechnical users such as lab technicians.  Minimal training should be needed to operate the system. |
| NFR-2 | **Security** | Image uploads should be processed securely and deleted after prediction unless storage is |

Following are the functional requirements of the proposed solution.

|  |  |  |
| --- | --- | --- |
| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | User Registration | Registration through Form  Registration through Gmail  Registration through LinkedIN |
| FR-2 | User Confirmation | Confirmation via Email Confirmation via OTP |
| FR-3 | User Interface (UI) | Allows users to upload blood smear images (JPG/PNG).  Displays predicted blood cell type and confidence level. |
| FR-4 | Image Preprocessing Module | Automatically resizes and normalizes input images.  Converts images to suitable input format for the model |
| FR-5 | Prediction Output Module | Displays prediction results with confidence score. Optionally shows visual markers/highlights on cell image (futur |
| FR-6 | Data Validation | Ensures only valid image files are uploaded.  Handles error messages for unsupported formats or failed uploads. |
| FR-7 | Model Management | Supports updating or replacing the deep learning model file without changing the core code |
| FR-8 | Security & Privacy | Ensures uploaded images are not stored permanently unless explicitly allowed.  Follows basic privacy compliance for patient data (if used in real-time clinical settings). |

**Non-functional Requirements:**

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

|  |  |  |
| --- | --- | --- |
|  |  | required.No personally identifiable information (PII) should be stored without consent. |
| NFR-3 | **Reliability** | The system should ensure high uptime when deployed on cloud platforms. Predictions should remain consistent across repeated evaluations of the same image |
| NFR-4 | **Performance** | The system should deliver blood cell classification results within 5 seconds for each image upload. The model should maintain at least 90% accuracy on test data. |
| NFR-5 | **Portability** | The solution should run on **multiple platforms**— locally (Windows/Linux) and online (via web deployment). Future deployment on **mobile devices** via TensorFlow Lite should be supported. |
| NFR-6 | **Scalability** | The application should support scaling to handle multiple users simultaneously (when deployed online).Future upgrades should allow classification of additional cell types or diseases. |