Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date	27 February 2026
Team ID	LTVIP2026TMIDS79391
Project Name	**HematoVision: Advanced Blood Cell Classification Using Transfer Learning**
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 Management	Image Upload and Preprocessing	Support for various image formats (e.g., JPG, PNG), Normalization, Resizing
FR-2	Model Operations	Transfer Learning Model Loading	Load pre-trained models (e.g., VGG, ResNet) for fine-tuning
FR-3	Classification	Blood Cell Type Prediction	Classify a given blood cell image into one of the defined types (e.g., Neutrophil, Eosinophil)
FR-4	User Interface	Result Visualization	Display predicted class, confidence score, and input image
FR-5	Audit Trail	System Logging	Log all classification requests, model versions used, and user activity

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The user interface for image submission and result viewing must be intuitive and easy to navigate for lab technicians.
NFR-2	**Security**	Secure handling and storage of sensitive patient data and blood cell images. Role-based access control (RBAC) for different user types.
NFR-3	**Reliability**	The classification model should provide consistent and reproducible results for the same input image. System uptime should be 99.9%.
NFR-4	**Performance**	Classification prediction for a single image must be completed within 3 seconds. Image preprocessing must be optimized for speed.
NFR-5	**Availability**	The system must be available 24/7. Procedures for quick recovery from failures must be in place.
NFR-6	**Scalability**	The system should be able to handle an increased volume of image classification requests (e.g., up to 100 concurrent requests) by leveraging cloud resources.