Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	15 February 2026
Team ID	LTVIP2026TMIDS49741
Project Name	HematoVision: Advanced Blood Cell Classification Using Transfer Learning
Maximum Marks	4 Marks

Technical Architecture:

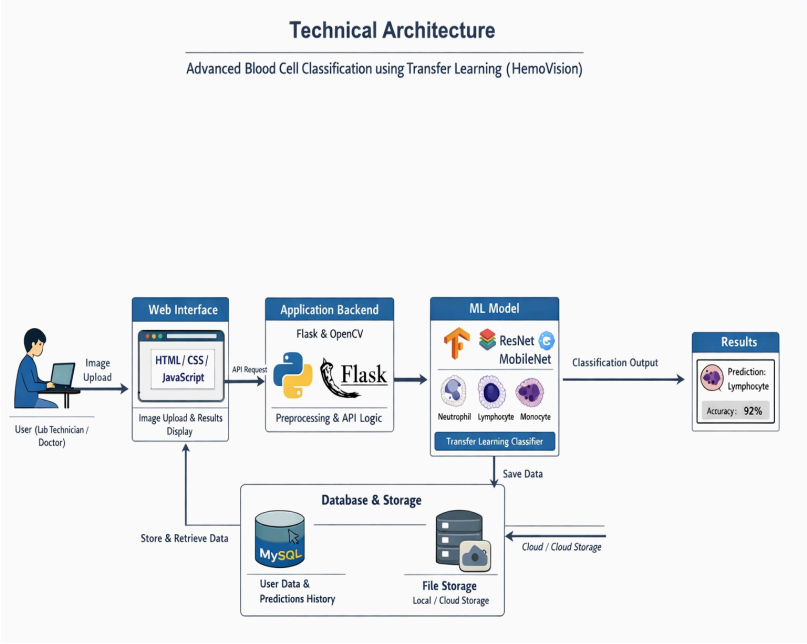

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.

S.No	Characteristics	Description	Technology
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

HematoVision: Advanced Blood Cell Classification Using Transfer Learning

1 User Layer (Frontend)

Web Interface (HTML, CSS, JavaScript / React)

Image Upload Option

Result Display (Cell Type + Accuracy)

2 Application Layer (Backend)

Python (Flask / Django)

Image Preprocessing (OpenCV, NumPy)

Model Loading (TensorFlow / Keras / PyTorch)

3 Machine Learning Layer

Transfer Learning Model

(ResNet50 / MobileNetV2)

Trained on Blood Cell Dataset

Classification Output:

Eosinophil

Lymphocyte

Monocyte

Neutrophil

4️⃣ Database Layer

MySQL / SQLite

Stores:

User details

Prediction history

Uploaded image path

5️⃣ Storage

Local File System / Cloud Storage

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d