

Project Design Phase

Proposed Solution Template

Date	20 January 2026
Team ID	LTVIP2026TMIDS76912
Project Name	HematoVision: Advanced Blood Cell Classification Using Transfer Learning
Maximum Marks	4 Marks

Proposed Solution :

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual blood cell classification using microscopes is time-consuming, labor-intensive, and prone to human error. There is a need for an automated, accurate, and fast system to classify blood cells from microscopic images to support medical diagnosis
2.	Idea / Solution description	HematoVision is an AI-based web application that uses a deep learning CNN model (VGG16 with transfer learning) to automatically classify blood cell images into eosinophils, lymphocytes, monocytes, and neutrophils. Users upload blood smear images through a web interface, and the system processes them via a Flask backend and trained model to produce instant classification results with confidence scores.
3.	Novelty / Uniqueness	The system combines transfer learning with medical image analysis in a lightweight web-deployable architecture. It provides real-time blood cell classification without requiring specialized lab software, making AI-assisted hematology accessible in low-resource or remote settings
4.	Social Impact / Customer Satisfaction	HematoVision helps doctors and lab technicians obtain faster and more consistent blood cell analysis, reducing diagnostic delays and errors. It supports telemedicine and rural healthcare by enabling remote analysis of blood samples, improving patient care and accessibility
5.	Business Model (Revenue Model)	The solution can be offered as a subscription-based diagnostic support tool for hospitals, clinics, and pathology labs. Additional revenue can come from enterprise licensing, cloud-based API access for medical software integration, and premium analytics features.
6.	Scalability of the Solution	The architecture is scalable because the model and Flask API can be deployed on cloud servers and expanded to support more users, larger datasets, and additional blood cell classes or diseases. Future integration with hospital information systems and cloud storage enables large-scale medical