Proposed Solution Template

Date: 15 February 2025

Team ID: LTVIP2025TMID36593

Project Name: HematoVision: Advanced Blood Cell Classification Using Transfer Learning

Maximum Marks: 2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter Description
1. Problem Statement (Problem to be solved)	Manual classification of blood cells under a microscope is time-consuming and error-prone. There's a need for an automated, fast, and accurate classification system to assist pathologists and medical technicians in diagnosing diseases efficiently.
2. Idea / Solution description	We propose HematoVision, a deep learning-based solution using transfer learning (MobileNetV2) to classify blood cells into eosinophils, lymphocytes, monocytes, and neutrophils. The system is deployed as a Flask web application that allows image uploads, runs predictions, and shows results in real-time.
3. Novelty / Uniqueness	Our solution is unique in combining the power of lightweight MobileNetV2 with a streamlined web interface, providing immediate results without the need for high-end hardware or domain expertise in deep learning.
4.Social Impact / Customer Satisfaction	This solution improves diagnostic accuracy and reduces workload on lab technicians. It also benefits rural healthcare systems by enabling remote blood analysis. For students and trainers, it offers an educational tool for visual learning.
5. Business Model (Revenue Model)	A freemium model can be applied — basic features remain free for educational and nonprofit use, while clinics and hospitals may subscribe to access batch predictions, record exports, and model fine-tuning.
6. Scalability of the Solution	HematoVision is scalable as it can integrate

	more cell types, work across devices, and be deployed on cloud platforms. The architecture supports expansion into mobile health apps and integration with electronic medical records (EMRs).