Project Design Phase
Proposed Solution Template

Date	27 June 2025
Team ID	L LTVIP2025TMID59888
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)**	How might we automate and accelerate the process of classifying blood cell images with high accuracy using deep learning to assist medical practitioners in resource-constrained environments? The current manual process is slow, requires highly trained experts, and is prone to human error, leading to delays in diagnosis and treatment.
2	**Idea / Solution description**	HematoVision offers a local, Flask-based web application that integrates a MobileNetV2 transfer learning model for classifying blood cell images. Users can upload images through a simple web interface, and the system preprocesses (using OpenCV + NumPy), classifies, and displays results instantly, enabling faster and more accurate diagnosis support.
3	**Novelty / Uniqueness**	Combines a lightweight, high-accuracy MobileNetV2 model fine-tuned for blood cell classification with an offline-capable web interface — allowing deployment even in clinics with limited internet or cloud access. The solution is highly user-friendly and requires minimal technical skill to operate.
4	**Social Impact / Customer Satisfaction**	Provides affordable, accessible diagnostic support to clinics and hospitals in underserved areas, reduces the load on pathologists, accelerates patient care, and ensures higher accuracy through AI assistance, leading to better health outcomes.
5	**Business Model (Revenue Model)**	The core version is open-source for academic and small clinic use. Enhanced versions (cloud-enabled, integrated with hospital systems, telemedicine ready) can follow a subscription or license fee model, with options for support and updates.
6	**Scalability of the Solution**	HematoVision is designed to scale from single-machine local deployment to cloud-hosted services or integration with hospital information systems. The model can be expanded to classify additional blood cell types or related pathologies in the future.