# Project Design Phase
# Proposed Solution Template

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| Date | 04 February 2026 |
| Team ID | LTVIP2026TMIDS55747 |
| 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) | Automating the classification of white blood cells into four subtypes (Eosinophils, Lymphocytes, Monocytes, Neutrophils) to reduce the high rate of human error and fatigue in manual microscopy. |
| 2. | Idea / Solution description | A deep learning web application built with **Flask** and **MobileNetV2** that allows technicians to upload microscopic images for real-time classification with 94.8% validation accuracy. |
| 3. | Novelty / Uniqueness | The system utilizes **Transfer Learning** to achieve clinical-grade accuracy on a small dataset while maintaining an extremely fast inference speed of ~250ms per image. |
| 4. | Social Impact / Customer Satisfaction | Improves healthcare accessibility in resource-limited areas by providing a low-cost, automated diagnostic aid that reduces the workload of specialized pathologists. |
| 5. | Business Model (Revenue Model) | A **Software-as-a-Service (SaaS)** model for diagnostic centers or a one-time licensing fee for integration into existing laboratory information systems (LIS). |
| 6. | Scalability of the Solution | The lightweight nature of the MobileNetV2 architecture allows the tool to scale from local laboratory PCs to cloud-based platforms for batch processing large volumes of data. |