**Project Design Phase**

**Proposed Solution Template**

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| Date | 15 February 2025 |
| Team ID | LTVIP2025TMID35810 |
| 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.

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) |  |
|  | Idea / Solution description |  |
|  | Novelty / Uniqueness |  |
|  | Social Impact / Customer Satisfaction |  |
|  | Business Model (Revenue Model) |  |
|  | Scalability of the Solution |  |

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| **S.No.** | **Parameter** | **Description** |
| 1 | **Problem Statement (Problem to be solved)** | Manual blood cell classification is time-consuming, prone to human error, and requires expert hematologists. This leads to delayed diagnosis and treatment, affecting patient outcomes. |
| 2 | **Idea / Solution description** | Hematovision is an AI-powered system using Transfer Learning to automate blood cell classification from microscopic images. The solution employs pre-trained deep learning models (like ResNet, EfficientNet) fine-tuned for accurate classification of RBCs, WBCs, and platelets. |
| 3 | **Novelty / Uniqueness** | Uses state-of-the-art transfer learning models for high accuracy and low training time, integrated with a user-friendly interface for diagnostic labs. Unlike conventional models, it adapts pre-trained architectures to medical imaging, ensuring robustness with minimal dataset requirements. |
| 4 | **Social Impact / Customer Satisfaction** | Reduces diagnosis time, improves accuracy, and enables timely treatment. Addresses shortage of skilled hematologists, making quality healthcare accessible in rural and resource-limited areas. |
| 5 | **Business Model (Revenue Model)** | Subscription-based SaaS model for diagnostic labs and hospitals. One-time licensing for enterprise clients. Potential freemium model for small clinics. |
| 6 | **Scalability of the Solution** | Easily deployable in cloud environments for global access. Can integrate with existing LIS (Laboratory Information Systems) and expand to other medical image classification tasks in the future. |