**Project Design Phase**

**Proposed Solution Template**

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| Date | 15 February 2025 |
| Team ID | LTVIP2025TMID35810 |
| Project Name | Hemotovision |
| 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) | Manual blood smear analysis is time-consuming, requires trained experts, and is prone to human error. In rural or under-resourced settings, access to such expertise is limited, delaying diagnosis and treatment. There is also a lack of interactive tools to support pathology education and training. |
|  | Idea / Solution description | **HematoVision** is a deep learning-based web application that classifies blood cells (e.g., neutrophils, lymphocytes, monocytes, eosinophils) from microscope images. Built using TensorFlow and Flask, the tool provides real-time results with confidence scores. It can run offline, supports educational use, and assists both professionals and students in diagnostics. |
|  | Novelty / Uniqueness | * Combines AI classification with educational feedback features * Offline-capable for rural deployment * Built-in confidence scoring increases trust and transparency * Uses transfer learning (ResNet50) for fast, high-accuracy predictions * Usable by non-experts — democratizes access to diagnostic technology |
|  | Social Impact / Customer Satisfaction | * **Improves healthcare access** in rural and low-resource areas * **Reduces diagnostic errors** by assisting pathologists and technicians * **Supports medical education** through hands-on, real-time feedback * Saves time and effort, improving overall satisfaction for both patients and healthcare workers |
|  | Business Model (Revenue Model) | * **Freemium Model**: Basic version free for students and training use * **Subscription-Based**: Monthly plans for hospitals and clinics with advanced analytics, reporting, and multi-user support * **Institutional Licensing**: Custom deployments for medical colleges, labs, or government health centers * Optional add-ons: cloud storage, API access, multilingual interface |
|  | Scalability of the Solution | HematoVision is scalable both technically and geographically:   * Can be deployed on cloud or local systems * Easily expandable to include more cell types (e.g., RBCs, platelets, abnormal forms) * Adaptable for mobile apps or offline desktop versions * Extendable for integration with lab management systems, EHRs, or education platforms |