**Project Design Phase**

**Problem – Solution Fit Template**

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| Date | 15 February 2025 |
| Team ID | LTVIP2025TMID33915 |
| Project Name | Hemotovision |
| Maximum Marks | 2 Marks |

**✅ HematoVision – Problem–Solution Fit**

**🔍 Problem**

Pathologists and lab technicians currently spend hours manually examining blood smear images under microscopes to identify different types of white blood cells. This process is:

* Time-consuming
* Prone to human error
* Difficult to scale in rural or low-resource settings
* Inaccessible for medical students who lack real-time feedback tools

There is also a gap in training support for students and technicians, and no easy way to consistently classify cell types with accuracy.

**💡 Solution**

**HematoVision** is an AI-powered diagnostic tool that uses deep learning (ResNet50) to classify white blood cells in real-time. The solution:

* Accepts uploaded microscope images through a web-based interface
* Instantly detects and classifies the blood cell type (neutrophil, lymphocyte, monocyte, eosinophil)
* Displays confidence scores to help users assess prediction certainty
* Works offline, supporting remote healthcare centers and mobile labs
* Supports training/education through interactive usage

**🎯 Customer Segment (Target Group)**

* Pathologists and lab technicians in diagnostic laboratories
* Medical students and educators in hematology
* Rural healthcare centers with minimal infrastructure
* Hospitals seeking automation in pathology workflows

**🚀 Fit with User Behavior**

* Pathologists are already examining blood slides — HematoVision fits seamlessly into this workflow
* Students can easily upload images for learning and receive instant feedback
* No installation required — the solution is lightweight, web-based, and mobile-friendly
* Trust is built by combining medical accuracy with clear explanations (e.g., confidence scores)

**🎯 Purpose (Impact)**

* Solve a complex diagnostic problem with a reliable AI tool
* Improve diagnosis speed and accuracy, especially in under-resourced areas
* Accelerate learning curves in medical education
* Reduce repetitive workloads and human fatigue
* Build trust by delivering consistent and high-performing outputs

**📌 Why It Works**

* It solves a **frequent**, **urgent**, and **high-cost** problem in healthcare diagnostics
* Aligns with existing behavior: upload → result → verify
* Requires minimal technical training
* Provides instant, actionable value without changing workflow

### ✅ ****Scenario 1: Rural Clinic Technician****

**Problem**: A lab technician in a rural clinic has no pathologist available and must manually check blood smears.  
**Solution**: With HematoVision, they upload an image and instantly get the classified cell type with a confidence score.  
**Fit**: Solves an urgent and frequent problem using a tool that requires no internet or complex setup.

### ✅ ****Scenario 2: Medical Student Learning Tool****

**Problem**: A 3rd-year medical student struggles to differentiate between monocytes and lymphocytes.  
**Solution**: She uses HematoVision to upload practice slides and see correct labels, improving her diagnostic skill.  
**Fit**: Enhances learning through instant feedback, aligned with student behavior and educational needs.

### ✅ ****Scenario 3: Overloaded Hospital Pathologist****

**Problem**: A hospital pathologist must review 80+ samples per day, leading to fatigue and potential errors.  
**Solution**: HematoVision acts as a second-opinion tool, verifying classifications quickly and consistently.  
**Fit**: Supports accuracy and efficiency without changing the existing workflow.

**🔗 References:**

* [Idea Hackers – Problem Solution Fit Canvas](https://www.ideahackers.network/problem-solution-fit-canvas/)
* [Epicantus – Medium Article](https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe)