

Project Design Phase
Problem – Solution Fit Template

Date	29 june 2025
Team ID	LTVIP2025TMID46471
Project Name	Hematovision : advanced blood cell classification using transfer learning
Maximum Marks	2 Marks

1. Problem Statement

Manual classification of blood cells is a time-consuming and error-prone task that pathologists and lab technicians perform. This results in inefficiencies, errors in diagnosis, and delays in patient treatment plans. The need for an automated system that can classify blood cells accurately and rapidly is evident. The existing process is prone to fatigue and human error, leading to a potential risk in medical decision-making.

2. Solution Description

HematoVision leverages a deep learning-based solution to automate the classification of blood cells using MobileNetV2, a pre-trained model fine-tuned for blood cell images. The system allows users to upload images of blood cells, which the model processes and classifies into four types: Eosinophil, Basophil, Monocyte, and Lymphocyte. This solution reduces manual errors and significantly speeds up the diagnostic process, enabling faster and more accurate diagnoses.

3. Customer/Target Audience

The primary target audience for HematoVision includes pathologists, lab technicians, and medical professionals who rely on blood cell classification for diagnostic purposes. The solution also caters to medical institutions that require an efficient, scalable way to classify blood cells with accuracy.

4. Customer Needs and Behaviors

The customers face the challenge of manual and time-consuming blood cell classification, which is prone to errors and inefficiencies. They need a fast, accurate, and reliable method to classify blood cells without the heavy reliance on human labor. The solution should fit into their current workflow and help them speed up diagnostics, reduce errors, and increase operational efficiency.

5. Solution Fit

HematoVision addresses these customer needs by providing an automated solution for blood cell classification using advanced machine learning techniques. The web-based tool is user-friendly and does not require significant changes to existing workflows. It automates the image classification process, offering a quick and reliable alternative to manual methods, and ultimately improves the speed and accuracy of diagnoses.

6. Key Metrics for Success

Success for HematoVision will be measured by the following key metrics:

- **Reduction in Classification Time****: Faster image processing compared to manual methods.
- **Accuracy Improvement****: Increased accuracy in blood cell classification.
- **Customer Adoption Rate****: The rate at which pathologists, lab technicians, and medical facilities adopt the solution.
- **Operational Efficiency****: Improved efficiency in medical workflows and diagnostics.

Template:

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? I.e. working parents of 0-5 y.o. kids	6. CUSTOMER CONSTRAINTS CC What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer, calculate usage and benefits; Indirectly associated: customers spend free time on volunteering work (I.e. Greenpeace)	
Identify strong TR & EM	3. TRIGGERS TR What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.	10. YOUR SOLUTION SL If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design.		8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.	

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>