

Project Design Phase
Problem – Solution Fit Template

Date	15 February 2026
Team ID	LTVIP2026TMIDS82253
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	2 Marks

Problem – Solution Fit Template:

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The Problem–Solution Fit in this context means that we have identified a critical challenge faced by patients, doctors, and healthcare providers — the difficulty of accurately and quickly diagnosing diseases from medical images, especially in resource-limited environments — and developed an AI-based medical image analysis solution using transfer learning (Xception model).

This solution automates disease detection, reduces diagnosis time, minimizes human error, and supports early and reliable medical decision-making.

Purpose:

- ☐ Help patients, doctors, and diagnostic centers address the critical problem of disease identification from medical images using an accurate, fast, and easy-to-use AI system that integrates smoothly into existing healthcare workflows.
- ☐ Accelerate adoption by leveraging familiar devices such as smartphones and computers and simple actions like uploading medical images, making the solution accessible even in rural clinics and low-resource healthcare settings.
- ☐ Strengthen trust and communication by providing clear, instant predictions that support medical professionals, reduce uncertainty, and improve confidence in diagnosis outcomes.
- ☐ Build stronger relationships with end-users by addressing real-world healthcare challenges such as delayed diagnosis, shortage of specialists, high consultation costs, and manual interpretation errors, while offering a reliable, AI-assisted alternative that improves efficiency and patient care.

Template:

Problem-Solution fit canvas 2.0		Purpose / Vision	
Define CS, fit into	1. CUSTOMER SEGMENT(S) CS <ul style="list-style-type: none"> Patients needing early disease detection Doctors & medical practitioners Small clinics and diagnostic centres Rural healthcare providers Users with basic internet access and smartphones/laptops 	6. CUSTOMER CC <ol style="list-style-type: none"> High medical costs Limited access to specialists Time constraints Poor healthcare access in rural areas Need for simple, easy-to-use systems 	5. AVAILABLE SOLUTIONS AS <p>Existing solutions customers use:</p> <ul style="list-style-type: none"> Manual diagnosis by doctors Traditional lab tests Physical hospital visits Human interpretation of reports <p>Pros:</p> <ul style="list-style-type: none"> Trusted medical process <p>Cons:</p> <ul style="list-style-type: none"> Time-consuming Costly Human error possible
	2. JOBS-TO-BE-DONE/ PROBLEMS J&P <ol style="list-style-type: none"> Identify disease from medical images accurately Reduce dependency on manual diagnosis Get quick results without specialist delay Assist doctors in decisionmaking Enable early-stage disease detection 	9. PROBLEM ROOT CAUSE RC <p>Why does this problem exist?</p> <ul style="list-style-type: none"> Shortage of medical specialists Increasing patient load Manual diagnosis is time-intensive Lack of AI adoption in small clinics Delay in early disease detection 	7. BEHAVIOUR BE <ol style="list-style-type: none"> Visit hospitals for diagnosis Wait for reports and consultations Rely fully on expert opinion Search health information online Delay diagnosis due to cost or fear
Identify strong TR & EM	3. TRIGGERS TR <ol style="list-style-type: none"> Experiencing health symptoms Delay in doctor availability High cost of medical consultations 	10. YOUR SOLUTION SL <ol style="list-style-type: none"> AI-powered medical image analysis system Uses Google deep learning model Flask-based web application Easy image upload and instant prediction Secure user data storage using CloudDB Supports doctors and patients in diagnosis 	8. CHANNELS of BEHAVIOUR CH <p>8.1 ONLINE</p> <ul style="list-style-type: none"> Medical websites Health apps Online consultations Hospital portals Web-based diagnostic tools <p>8.2 OFFLINE</p> <ul style="list-style-type: none"> Hospital visits Diagnostic labs Doctor consultations Health camps
	4. EMOTIONS: BEFORE / AFTER EM <p>Before using solution: Confused, Anxious, Fear of late diagnosis, <u>Uncertain</u> about reports</p> <p>After using solution: <u>Confident</u>, <u>Reassured</u>, <u>Informed</u>, In control of health decision</p>		

