

Project Design Phase
Problem – Solution Fit Template

Date	08/02/2026
Team ID	LTVIP2026TMIDS83275
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	2 Marks

Problem – Solution Fit Template:

• **Solving Complex Problems:**

This deep learning system addresses the high-variability and expertise-dependent nature of diabetic retinopathy diagnosis by transforming complex retinal image patterns into structured, data-driven severity predictions. It reduces diagnostic subjectivity and converts visual medical "noise" into accurate, automated classification results suitable for screening environments.

• **Increasing Solution Adoption:**

By integrating into existing hospital workflows and digital screening systems, the model works with standard fundus image formats (.jpg, .png) captured through retinal cameras. The web-based interface ensures that healthcare professionals can use the tool without learning new complex systems, making adoption seamless and non-disruptive.

• **Sharpening Communication:**

The system identifies critical healthcare triggers — such as routine diabetic checkups, vision complaints, or community screening camps — to provide early risk detection feedback. It shifts stakeholders from a state of uncertainty and delayed diagnosis to timely awareness and proactive treatment planning.






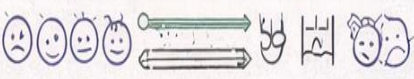


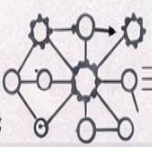

• **Increasing Touch-points & Building Trust:**

By solving the frequent problem of delayed diagnosis and human error in manual screening, the model enhances trust through consistent prediction accuracy and quick turnaround time. Over time, repeated reliable results increase confidence among healthcare providers and patients.

• **Improving the Existing Situation:**

The system moves the screening process from purely specialist-dependent evaluation toward an AI-assisted, scalable healthcare solution. It supports inclusive medical access, especially in rural or under-resourced areas where ophthalmologists are limited, enabling early intervention and reducing preventable blindness.

Template:

 <h1>Early Detection of Diabetic Retinopathy</h1>		Problem-Solution Fit
Define CS, Affinity	1. CUSTOMER SEGMENT(S) CS <ul style="list-style-type: none"> Ophthalmologists Diabetologists Hospitals & Eye Clinics Rural Healthcare Centers Government Screening Programs Diabetic Patients (Indirect beneficiaries) Medical Research Institutions 	6. CUSTOMER CONSTRAINTS CC <p>What constraints prevent your customer from taking action to limit their chances of solution? i.e. spending power, budget, no cash, network connection, available services.</p>
	5. AVAILABLE SOLUTIONS AS <p>Which solutions are available for the customers when they face the problem prevent to getting solution what time? If they solve are your solution time? How do these solutions suit more when compared to what you offer?</p> <p>Limitations:</p> <ul style="list-style-type: none"> Time-consuming : > Subjective, interpretative, Subjective, interpretative; < Not scalable: Not scalable. >> Requires expert presence <h 	
Focus Market & participants	2. JOBS-TO-BE-DONE/ PROBLEMS JBP <p>Which job(s)/he-hoe/problem(?) do you address for your customers?</p> <ul style="list-style-type: none"> Early detection of diabetic retinopathy Reduce workload of ophthalmologists Improve diagnostic accuracy. Enable mass screening programs Provide quick, and reliable results Prevent vision loss in diabetic patients 	9. PROBLEM ROOT CAUSE RC <p>What is the reason for this problem?</p> <p>++ snle is their route apdunin di pope lienedul sdoymte demand for this job?</p> <ul style="list-style-type: none"> Increasing diabetic population Shortage of trained ophthalmologists Manual diagnosis dependent on experience. Human fatigue and error Delayed screening due hospital overload Limited AI adoption in public healthcare centers 
	8. PROBLEM ROOT CAUSE AS <p>What is the reason for this problem?</p> <p>++ snle sit their equant ion ipe cement to badeit nioe demand for this job?</p> <ul style="list-style-type: none"> Current F¹ lactact; population Shortage of trained ophthalmologists. Manual diagnosis dependent on experience Human fatigue and error Delayed screening due to hospital overload Limited AI adoption in primary healthcare 	
Focus by attorney ion	3. TRIGGERS TR <ul style="list-style-type: none"> Routine diabetic health checkup Vision blur symptoms Community screening programs Government health initiatives Awareness campaigns about diabetic complications. 	4. YOUR SOLUTION SL <p>If you are working on an existing systems, build down your current solution first. In it, visually your resettice solution of you own care and our the by you there on a place ectos sucking the merfent ericet. this is al, above yet, sevice ho ach iyou. Denin and aittitabie ad boithetic enertage (reflections)</p> 
	8. BEHAVIOR: BE <ul style="list-style-type: none"> Early-detection: on-duty attention problems Manual image examination Delayed diagnosis Reliance on expert opinion Preventive healthcare approach 	
Measure Proposition	4. EMOTIONS: BEFORE / AFTER EM <ul style="list-style-type: none"> Fear of blindness Anxiety about diagnosis Uncertainty in early stages Dependence on specialist availability Feeling of healthcare security  <p>Before: How does manual, expert-dependent screening into fast, accurate as itubetts ine connecth; strategy & design.</p>	8. YOUR SOLUTION CH <ul style="list-style-type: none"> AI-powered Deep Learning system- <ul style="list-style-type: none"> Accepts retinal fundus images Performs automated preprocessing Uses CNN model for classification predicts DR severity level Scalence scumite in hmanual insporting  <p>Value proposition: Transforms manual, expert-dependent screening into fast, accurate, AI-assisted diagnosis; racted snuatae porjection.</p>
	8. CHANNELS of BEHAVIOR CH <p>8.1 ONLINE</p> <ul style="list-style-type: none"> Internet Management Systems, Video content streaming platforms Cloud-based healthcare systems Reversal: prevent Intermedic ine platforms <p>8.2 OFFLINE</p> <ul style="list-style-type: none"> Like solving comps. < connniten. healthcare centers 	

References:

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