Problem Solution Fit

Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy

1. CUSTOMER SEGMENT(S) — CS

Who is your customer?

Ophthalmologist - physician who specializes in the diagnosis and treatment of diseases of the eye

6. CUSTOMER CONSTRAINTS — CC

What constraints prevent your customers from taking action or limit their choices of solutions?

- Correct prediction of disease
- The accuracy of the predicted disease
- End user's health issue

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?

Ophthalmologist manually diagnosing DR from fundus images.
It demands high level of expertise and effort

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.

- Diabetic Retinopathy(DR) is a common complication of diabetes mellitus,which causes lesions on the retina that affect vision
- The manual diagnosis uses much time and cost to predict unlike the computer aided system

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?

- Correct prediction of disease
- The accuracy of the predicted disease
- End user's health issue whether the patient doesn't gets affected

7. BEHAVIOUR — BE

What does your customer do to address the problem and get the job done?

They need to find a experts ophthalmologists who can diagnosis Diabetic Retinopathy in short time and minimum cost. They should take treatment in the initial stage.

3. TRIGGERS — TR

What triggers customers to act?

- Blurred and fluctuating vision
- Floating eye

4. EMOTIONS: BEFORE / AFTER — EM

How do customers feel when they face a problem or a job and afterwards?
Before: Fear,anxiety,vulnerability,guilt,stress
After: Happy, confident and peacefull

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 behavior.

A deep learning model using CNN that could detect the DR accurately, which minimizes the cost and also a load of detecting it is shifted from the ophthalmologists which in turn increase the patient doctor ratio

8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE
What kind of actions do customers take online? Extract online channels from #7

An online diabetic retinopathy Screening tool for patients with type 2 diabetics

8.2 OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

Optical coherence tomography, fundus fluorescein angiography, slit lamp biomicroscopy, and fundus imaging

Extract online & offline CH of

**B
E**

AMALTAMA