# Project Design Phase-1 Proposed Solution

| Date          | 27 September 2022   |
|---------------|---|
| Team ID       | PNT2022TMID41433  |
| Project Name  | Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy |
| Maximum Marks | 2 Marks   |

#### **Problem Statement:**

Detecting the stage of Diabetic retinopathy using Fundus photograph images with help of transfer learned approach of EfficientNet-B5 model. The main objective of the project is to detect diabetic retinopathy to stop blindness before it is too late. we detect by classifying the images of retina of patient into five labels numbered from 0 to 4 where each label named as Normal, Mild DR, Moderate DR, Severe DR, Prolific DR respectively represents the Complication of the disease using Deep transfer learning and classification techniques. From these 5 stages one stages is observed as an output label for the given input fundus image

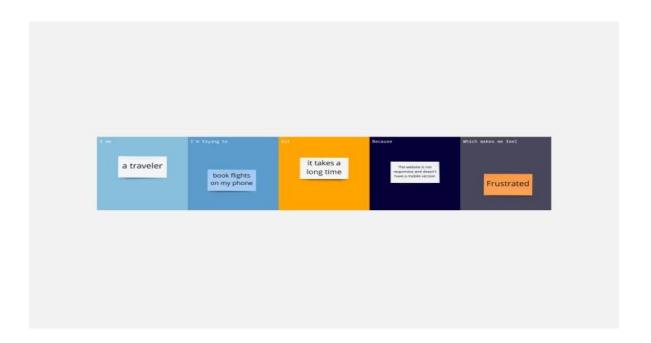
#### **Customer Problem Statement Template:**

#### **Example:**

| tatement            |  |
|---------------------|--|
| lam                 | Who is the customer? Describe and list their attributes.                           |
| I'm trying to       | What are they trying to achieve? List them here.                                   |
| but                 | What are the issues or barriers that get in the way? Note them here.               |
| because             | Why do these issues or barriers exist? List them here.                             |
| which makes me feel | What do they feel as a result of these issues or barriers? Note the emotions here. |

 $\label{lem:https://creately.com/diagram/example/FOFD8XkcGc1/customer-problem-statement-template} \\ \text{Reference:} \\ \underline{\text{https://creately.com/diagram/example/FOFD8XkcGc1/customer-problem-statement-template}} \\ \\ \text{Reference:} \\ \underline{\text{https://creately.com/diagram/example/FOFD8XkcGc1/customer-problem-statement-templateme$ 

## Example:



Reference: <a href="https://miro.com/templates/customer-problem-statement/">https://miro.com/templates/customer-problem-statement/</a>

| Problem<br>statement<br>(PS) | I am a<br>(customer) | I'm trying to  | But  | Because                                 | Which makes<br>me feel |
|------------------------------|----------------------|--|--|---|------------------------|
| PS-1                         | Child                | To pre-check<br>all the test<br>that related<br>to eye       | It takes long<br>time                              | This is one of<br>the best<br>Invention | Frustrated             |
| PS-2                         | Adult                | Identifying<br>the reason<br>for vision<br>blindness         | Complicate<br>to identify<br>the problem           | This is one of<br>the best<br>Invention | Satisfied              |
| PS-3                         | Aged persons         | Identifying<br>the reason of<br>vision or the<br>eye problem | Identification<br>of problem<br>are<br>complicated | To find<br>Alternative<br>way           | Satisfied              |

### **Proposed solution:**

The proposed method is a fast and robust one to extract exudates in color eye fundus image which is based on mathematical morphology where Blood vessels extraction is carried out which is followed by extraction of the hard exudates and optic disc and finally detection of the optic disc which is used for distinguishing it from exudates.