**Annexure-**

**Selected Problem:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Design Thinking – Empathy**

By field Survey, asking questions, and interviews with users/clients, the team will discuss and do Empathy mapping. The team has to prepare a questionnaire for the above activity and keep records. Attach all proofs to this document.

|  |  |
| --- | --- |
| What User Says | What User Thinks  (User thinks about their experience) |
|  | What User Feels  (Empathize User mental state of user/ client) |

**Problem Statement:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a/ an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**User User Characteristic**

Who needs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**User needs**

because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**insightsAnnexure-**

**Ideation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Requirement** | **Proposed Solution** | |
| **1.** | **Traditional retinal vessel segmentation lacks interpretability** | | |
|  | Available Solutions- | Proposed Solution- | |
| **2.** |  | | |
|  | Available Solutions- | | Proposed Solution- |
| **3.** |  | | |
|  | Available Solutions- | | Proposed Solution- |

**Solution-**

**The team will define the final solution here from the above table.**

**Scope-**

**A team with a guide will understand and define the scope of the proposed solution. As per scope they can take decision on dividing across semesters or years.**

**Annexure-**

**Selected Problem:**

**Farmers are not stable in farming and family life.**

**Design Thinking – Empathy**

By field Survey, asking questions, interviews to user/ client, team will discuss and do Empathy mapping. The team has to prepare questionnaire for above activity and keep records. Attach all proofs to this document.

|  |  |
| --- | --- |
| **Farmer Says:**   * I don’t know weather prediction * I should know market prices * I should know crop planning * High cost of pesticides and seeds * Interrupted power supply | **Farmer Thinks:**   * Good quality yield but no market * Someone should help me to us. * Proper weather forecasting is needed to take decision. * Assurance on market prices |
| **What User Does**   * Follows traditional methods * Follows which other do * Taking loans for investing * Using resources as per availability | **What Farmer Feels**   * Investing money (by loan) and hard work with no guarantee of returns * Can not make future plans for farm and family * Dependent on government rules, weather and market condition * Farmer life is crucial |

**Problem Statement:**

A farmer **is a** backbone of nation for raising food or raw need of human being, **who needs** technical support to overcome traditional planning for crop, unpredictable weather and market conditions and awareness of government policies **because** they are not having guaranteed returns due to which they are failing to plan good life.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Requirements** | **Proposed Solution** |
| **1.** | Algorithms face challenges due to changing lighting conditions when detecting blood vessels. | |
|  | Available Solutions-   * People can adjust the pictures before using the programs. | Proposed Solution-   * Train the algorithm on a diverse dataset encompassing images with varying lighting conditions for optimized performance. |
| **2.** | Abnormal vessel shapes hinder accurate processing by current programs. | |
|  | Available Solutions-   * After vessel detection, shape correction and algorithmic ensembles enhance accuracy. | Proposed Solution-   * Build an algorithm that learns from regular pictures and also learns to fix abnormal shapes using. It can work alongside another algorithm that can create new shapes for blood vessels. |
| **3.** | Assessing the accuracy of blood vessel detection in the absence of definitive answers is complex. | |
|  | Available Solutions-   * Seek evaluation from experts to determine the quality of results | Proposed Solution-   * Enhance the program to provide probabilistic certainty levels during vessel detection. |
| **4.** | People might have different kinds of eye diseases that affect the blood vessels, and the algorithm needs to be trained enough to recognize these changes. | |
|  | Available Solutions-   * Utilize transfer learning techniques by leveraging a pretrained model on a general vessel segmentation task and fine-tune it on the disease-specific dataset. | Proposed Solution-   * Incorporate disease-specific branches into the model, each tailored to recognize unique vascular changes characteristic of specific eye diseases (e.g., diabetic retinopathy, hypertensive retinopathy) |
| **5.** | Resource Management | |
|  | Available Solutions-   * As per availability * Searching for sharing or lease basis | Proposed Solution-   * A platform which will show availability of resources in villages, lease, exchange facility, etc. |

**Solution-**

Our system will help farmers to register and help them to plan crops, share resources, avail loans, vendor and market facility along with weather prediction.

**Scope-**

This solution has five modules to integrate. By considering the logic and technology engagements and its mapping with time limit and available skill sets, we are dividing this application in two years (i.e. four semester).

1. Crop planning and weather forecasting
2. Market analysis and approach
3. Loan and government schemes integration
4. Resource plannings
5. Integration of all modules