

# Ideation Phase

## Brainstorm & Idea Prioritization Template

Date	31 January 2025
Team ID	LTVIP2026TMIDS82253
Project Name	<b>Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy</b>
Maximum Marks	4 Marks

### Brainstorm & Idea Prioritization Template:

#### Step-1: Team Gathering, Collaboration and Select the Problem Statement



### Brainstorm & idea prioritization

Team Division (Technical + UI/UX)

- 1. Member 1 - Backend & Model Integration
  - Serve model via API
  - Handle image upload & preprocessing
  - Connect backend ↔ database
- 2. Member 2 - Frontend UI
  - Web/mobile interface for patients & doctors
  - Upload images & display predictions + heatmaps
  - Responsive design
- 3. Member 3 - Dashboard & UX
  - Screening dashboard & analytics
  - Visualize trends & DR severity progression
  - Improve usability
- 4. Member 4 - Deep Learning & Explainability
  - Train CNN for DR detection & multi-stage classification
  - Data preprocessing & augmentation
  - Generate Grad-CAM / heatmap visualizations

**Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

- 1 Team gathering
  - Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.
- 2 Set the goal
  - Think about the problem you'll be focusing on solving in the brainstorming session.
- 3 Learn how to use the facilitation tools
  - 1. Messaging & Communication
    - Slack - Channels for discussions, file sharing, real-time chat.
    - Microsoft Teams - Chat, video calls, integrated with Office apps.
    - Discord - Voice/video + text channels, informal yet effective.
  - 2. Video Conferencing
    - Zoom - Meetings, screen sharing, recording.
    - Google Meet - Quick, browser-based meetings.

**Define your problem statement**

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

**PROBLEM**

Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy

Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy is a medical imaging project aimed at using advanced deep learning techniques to analyze fundus images of the retina. The goal is to detect signs of diabetic retinopathy in its early stages, enabling timely intervention and treatment to prevent vision loss in diabetic patients. By leveraging deep learning models, such as convolutional neural networks (CNNs), the system can automatically identify and classify retinal abnormalities with high accuracy and efficiency.

**Step-2: Brainstorm, Idea Listing and Grouping**

## 2 Idea Grouping

**Person 1**



**Person 2**



**Person 3**



**Person 4**



3 Group ideas

Image Collection	Use mobile app camera; allow bulk upload, integrate cloud storage
Model Training	Fine-tune MobileNetV2; experiment with EfficientNet, data augmentation
User Feedback	Let users confirm/correct predictions
Prediction UX	Show confidence score; color-coded results
Notifications	SMS/email alerts on spoilage detected
Deployment	Use AWS Lambda for inference; Docker containers, Kubernetes
Integration	Link with inventory management systems
Accessibility	Multilingual support; offline mode

### Step-3: Idea Prioritization

