

Ideation Phase
Define the Problem Statements

Date	31 January 2025
Team ID	LTVIP2026TMIDS82253
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	2 Marks

Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy:

Statement	Content
I am (Customer)	A doctor, ophthalmologist, or healthcare professional responsible for screening diabetic patients' eye health.
I'm trying to	Detect diabetic retinopathy at an early stage using fundus images to prevent vision loss.
But	Manual examination of fundus images is time-consuming, subjective, and depends heavily on expert availability.
Because	Early signs of diabetic retinopathy are subtle and can be easily missed, especially during large-scale screenings.
Which makes me feel	Concerned about delayed diagnosis, stressed about workload, and worried about patients losing vision unnecessarily.

PS-1 (Doctor / Healthcare Professional View)

Element	Content
I am (doctor)	An ophthalmologist or healthcare professional screening diabetic patients.
I'm trying to	Detect diabetic retinopathy early using fundus images.
But	Manual examination is slow and may miss early-stage symptoms.
Because	Retinal abnormalities are subtle and require expert-level attention under time pressure.
Which makes me feel	Concerned about delayed diagnosis and potential vision loss in patients.

PS-2 (Tech Developer/Team View)

Element	Content
I am	A developer working on deep-learning based medical imaging solutions.
I'm trying to	Build an accurate deep learning model to detect diabetic retinopathy from fundus images.
But	Achieving high accuracy across all disease stages is challenging.
Because	Retinal images vary in quality and labeled medical datasets are limited.
Which makes me feel	Motivated to improve healthcare outcomes using deep learning..

Project Title

Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy

Problem Statement

Manual screening of fundus images for diabetic retinopathy is time-consuming, subjective, and dependent on expert availability. Early signs of the disease are often overlooked, leading to delayed diagnosis and increased risk of vision loss. There is a need for an automated and reliable screening system to support early detection.

Proposed Solution

This project uses deep learning-based convolutional neural networks (CNNs) to analyze retinal fundus images and automatically detect diabetic retinopathy. By leveraging transfer learning and image preprocessing techniques, the system aims to accurately classify disease stages and assist healthcare professionals in diagnosis.

Target Outcomes

- Achieve high classification accuracy (>90%)
- Enable early detection of diabetic retinopathy
- Reduce workload on healthcare professionals
- Support large-scale screening and telemedicine