

Project Design Phase-I
Proposed Solution Template

Date	30 September 2022
Team ID	PNT2022TMID52980
Project Name	Project – Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Diabetic Retinopathy is a common complication of diabetes mellitus, which causes lesions on the retina that affect vision. If it is not detected early, it can lead to blindness. This project focuses on detecting such underlying lesions that could potentially result in blindness.
2.	Idea / Solution description	Diabetic retinopathy is not a reversible process, and treatment only sustains vision. DR early detection and treatment can significantly reduce the risk of vision loss. The manual diagnosis process of DR retina fundus images by ophthalmologists is time, effort and cost-consuming and prone to misdiagnosis unlike computer-aided diagnosis systems. So, deep learning techniques can be used for early detection of diabetic retinopathy that can prevent blindness and other eye related diseases.
3.	Novelty / Uniqueness	The deep learning system identifies referable diabetic retinopathy comparably or better than presented in the previous studies. Hence, this model provides the patient with the result whether they have serious condition or normal condition. The prediction comes with different levels of illness helps to diagnose properly.
4.	Social Impact / Customer Satisfaction	Since diabetic retinopathy cannot be reversed, early detection prevents many people from losing their vision and developing other serious illnesses. Because the manual screening is more expensive than this model, it is more practical for the people to undergo this screening without any difficulties.

5.	Business Model (Revenue Model)	<p>We can collaborate with the health care centres and diabetic diagnosis centres for regular screening of diabetic retinopathy whenever the diabetic patient comes to check their diabetic level. We can raise awareness because many individuals are unaware of the implications of diabetic retinopathy, which could lead to an increase in screening tests in the future. Integrating this model in hospitals will increase the rate of patients which will automatically increase the organization's revenue. Detecting the problem early for a patient increases the trust and the connection with hospital which leads to a good bond between patients and the hospital.</p>
6.	Scalability of the Solution	<p>The system offers a better solution for diabetic retinopathy and can be detected at an early stage. The model developed using deep learning technology can be implemented on many clinical examinations. It is more adaptable to new images and datasets because it was built with a versatile dataset. It gives higher performance than manual examination. Thus, this system can be used to detect diabetic retinopathy early in real-time for new variations.</p>