

**Project Design Phase-I**  
**Proposed Solution Template**

Date	19 September 2022
Team ID	PNT2022TMID52888
Project Name	Project - Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy
Maximum Marks	2 Marks

**Proposed Solution Template:**

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	A common side effect of diabetes mellitus is diabetic retinopathy (DR), which results in lesions on the retina and impairs a person's ability to see. Blindness may result if it is not identified and treated in a timely manner. Treatment can only maintain vision and stop it from getting worse because DR is an irreversible process. The risk of vision loss can be significantly decreased with early detection and treatment of DR.
2.	Idea / Solution description	By analysing retinal fundus images, the primary goal is to identify diabetic retinopathy in its early stages. One of the most popular methods for improving performance, particularly in the classification and analysis of medical images, is transfer learning. We used transfer learning methods that are more frequently used in medical image analysis and are very successful, such as Inception V3, Resnet50, and Xception V3. Neural networks, deep learning, machine learning, and Python expertise will all be crucial to the success of our project.
3.	Novelty / Uniqueness	Contrary to computer-aided diagnosis systems, which are quick, affordable, and easy to use, the manual diagnosis of DR retina fundus images obtained by ophthalmologists is a laborious, expensive, and mistake-prone process. One of the major decisions that had to be made was selecting the appropriate programming language to satisfy our goal of extracting knowledge from our data. After some research, it was decided that choosing Python as the project's programming language was the best course of action. Python has a wide range of tools and frameworks that can be used to build effective artificial neural networks. Additionally, IBM Watson aids in future outcome prediction and automates

		complex processes, and optimize user's time. And also the result accuracy will be increased from 70% which is the accuracy of the test results that the previous developed codes produced.
4.	Social Impact / Customer Satisfaction	Helps in preventing the loss of visibility to the needs through CSR activities or through healthcare camps
5.	Business Model (Revenue Model)	Collaboration with diagnosis centers and hospitals. Collaborate with the government for health awareness camps.
6.	Scalability of the Solution	This project will help us to detect DR more accurately than the existing pipelines. Also it can produce a result which specifies the stages of Diabetic Retinopathy.