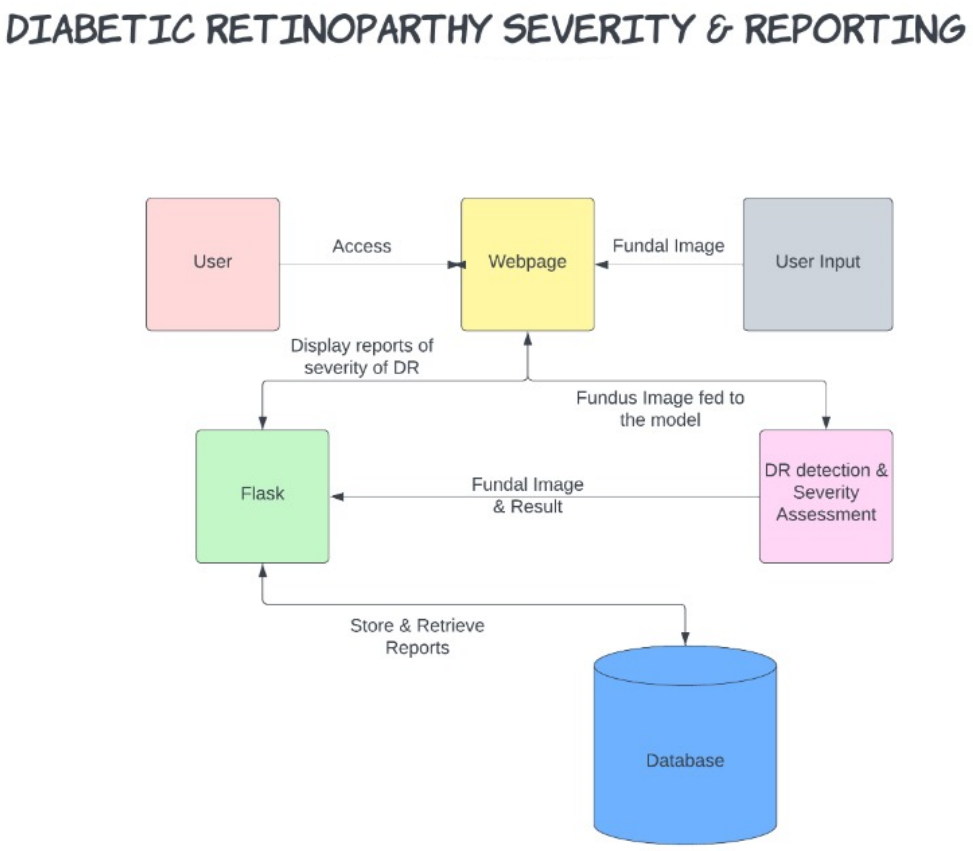
Project Planning Phase - I

Technology Stack (Architecture & Stack)

Date	8 November 2023
Team ID	PNT2023TMID592236
Project Name	Project - Deep Learning Fundus Image Analysis For Early Detection of Diabetic Retinopathy
Maximum Marks	4 Marks

Technical Architecture:



1. Users access a webpage to input their fundal image for diabetic retinopathy (DR) detection and severity assessment.
2. The input is processed, and the result along with the fundal image are sent to a Flask application.
3. The Flask app displays reports indicating the severity of DR to the users.

4. The system stores these reports in a database for future retrieval.
5. Users can later access and retrieve their DR reports from the database through the webpage

TABLE-1:

S.No	Component	Description	Technology
1.	User Interface	Users interact with the application by submitting retinal images, viewing assessments, and accessing historical data.	HTML, CSS, JavaScript / /React Js
2.	Application Logic-1	Handles data preprocessing, executes machine learning models for diabetic retinopathy detection, and generates severity assessments in the web interface.	Python
3.	Application Logic-2	Manages user input, custom scenarios in the diabetic retinopathy web interface.	Flask
4.	Application Logic-3	Facilitates model performance monitoring and reporting for diabetic retinopathy assessments in the web interface.	Python
5.	Database	Stores user data, retinal images, and diabetic retinopathy assessment reports.	MongoDB / PostgreSQL
6.	Cloud Database	Provides scalable and secure cloud storage for user data and diabetic retinopathy assessment reports.	AWS
7.	File Storage	Storing the model's required files, user data.	Local Filesystem
8.	External API-1	Google's OAuth 2.0 authentication service to enable user registration	OAuth 2.0

9.	Machine Learning Model	Utilizes historical data to predict diabetic retinopathy severity, enhancing decision-making within the web interface	Diabetic retinopathy Model(Python).
10.	Infrastructure (Server / Cloud)	Application Deployment on Local System Local Server Configuration:	AWS EC2, Kubernetes, etc.

TABLE-2 :

S.No	Component	Description	Technology
1	Open-Source Frameworks	The open-source Flask framework supports the website, enabling customization and extensibility for precise predictions.	Flask
2	Security Implementations	Utilizes authentication, encryption, and access controls to safeguard website	bitlocker
3	Availability	Can be available through a simple domain (because this project is a web page)	Google Domains,Register.com
4	Performance	Caching: When a user visits a website, the elements get stored in temporary hard drive storage called cache. This process loads pages faster. Reduce HTTP requests: Browsers use a cache to reduce the number and size of HTTP requests, making web pages load faster.	Hard drive (Temporary storage for caching data.)