

**Project Design Phase-II**  
**Technology stack (Architecture &Stack)**

Date	06-05-2023
Team ID	NM2023TMID14637
Project Name	<b>ODIR: Seeing The Big Picture For Eye Health</b>
Maximum Marks	4 Marks

**Technical Architecture:**

The technical architecture for ODIR comprises various components, technologies, and integration points that work together to deliver a scalable and effective eye health solution. Here is a breakdown of the key technical components:

**Table-1: components &Technologies:**

S.no	Component	Technologies
1.	Front-end Interfaces	Web and Mobile Applications, HTML, CSS, JavaScript
2.	Image Capture and Processing	Digital Fundus Cameras, Smartphone Cameras
3.	Image Pre-processing	Noise reduction algorithms, Image normalization techniques
4.	Feature Extraction	Computer Vision algorithms, OpenCV

5.	Machine Learning Models	Convolutional Neural Networks (CNNs), Deep Learning
6.	Disease Classification	Ensemble Methods, Transfer Learning
7.	Decision Support System	Expert Rules Engine, Clinical Guidelines
8.	Telemedicine Platform	Video Conferencing, WebRTC, Telehealth APIs
9.	Healthcare Information Exchange	HIE Standards (CCD, CDA), HL7, FHIR
10.	Security and Privacy	Encryption, Authentication, Access Control

**Table-2: Applications characteristics:**

S.no	Application Characteristic	Description
1.	Accuracy and reilability	The application aims to provide accurate and reliable identification and diagnosis of ocular diseases. It leverages advanced technologies, such as machine learning and computer vision, to analyze eye images and detect abnormalities with a high degree of precision.
2.	Scalability	ODIR is designed to scale up its operations to accommodate a large number of users and handle increasing demand for eye health services. It can efficiently process and analyze a vast amount of eye images, ensuring that individuals have access to timely diagnoses and treatments.

3.	Accessibility and User-Friendly Interface	The application focuses on accessibility and ease of use for both patients and eye care professionals. It provides user-friendly interfaces, such as web and mobile applications, allowing patients to easily upload their eye images, view diagnostic results, and schedule appointments. Eye care professionals can efficiently review and analyze the images and provide timely diagnoses and recommendations.
4.	Integration with Existing Healthcare Systems:	ODIR integrates with existing healthcare systems, such as electronic health records (EHR) and healthcare information exchange (HIE), to ensure seamless data sharing and continuity of care. It enables interoperability between different healthcare providers, facilitating effective communication and collaboration.
5.	Integration and Interoperability	The application integrates with existing healthcare systems, including electronic health records (EHR) and healthcare information exchanges (HIE), to ensure seamless data sharing and facilitate coordinated care among different healthcare providers.
6.	Security and Privacy	ODIR prioritizes the security and privacy of patient data. It implements robust security measures, such as encryption and access control, to protect sensitive health information and adheres to relevant data protection regulations.
7.	Analytics and Insights:	The application incorporates data analytics capabilities to derive insights from aggregated and anonymized patient data. This supports population health management, research, and planning for effective eye health interventions.

