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

Date	03 October 2022
Team ID	Team-593208
Project Name	Detecting COVID-19 From Chest X-Rays Using Deep Learning Techniques
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web interface for uploading X-ray images and obtaining results	HTML, CSS, JavaScript /Flask/React JS
2.	AI/ML Model	Machine learning model for COVID-19 detection from X-ray images	Python, TensorFlow, Keras, Scikit-Learn
3.	Database	Storage for user data and diagnostic results	MySQL, SQLite, or MongoDB
4.	Cloud Hosting	Deployment of the website on a cloud platform	AWS, Azure, Google Cloud
5.	Image Processing	Preprocessing of X-ray images for model input	OpenCV
6.	User Authentication	User login and authentication	Flask-Login, JWT, or OAuth2
7.	File Upload & Storage	Handling and storage of uploaded X-ray images	Flask-Uploads, Cloud Storage (if

			applicable)
8.	External API Integration	Integration of external APIs for health-related information	RESTful API calls (e.g., COVID-19 stats)
9.	Machine Learning Model Training	Training and updating of the AI model	Python, Jupyter Notebooks, GPU (if available)
10.	Flask Web Framework	Development of the web application using Flask	Flask.
11.	Responsive Design	Ensuring the website is responsive on different devices	Bootstrap, CSS media queries

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilization of open-source frameworks for the project	Python, Flask, TensorFlow, Keras, OpenCV, etc.
2.	Security Implementations	Implementation of security measures and access controls	SSL/TLS, Encryption, Authentication, Authorization
3.	Scalable Architecture	Ensuring the website can handle increasing traffic and data	Load Balancers, Microservices, Scalable Infrastructure

4.	Availability	Ensuring high availability and redundancy of the website	Load Balancing, Redundant Servers, Disaster Recovery
5.	Performance	Optimizing the website for performance and user experience	Caching, Content Delivery Networks (CDNs), Performance Monitoring