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

Date	13 May 2023
Team ID	NM2023TMID03654
Project Name	Project - Covid Vision: Advanced COVID-19 Detection from Lung X-Rays with Machine Learning or Deep Learnings

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Covid Pneumonia and non-Covid classifier

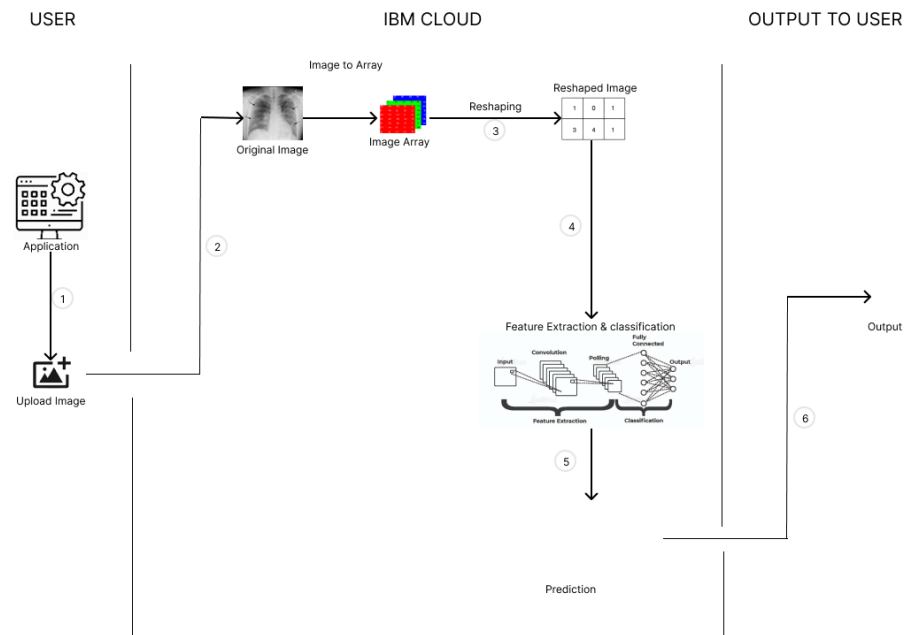**Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/**

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI and Mobile App.	Django and Flutter.
2.	Application Logic-1	How the model is trained and implemented for the application.	Python
3.	Application Logic-2	How the application behaves when user operates the application.	IBM Watson STT service
4.	External API-1	How the data or the image is transferred from the end user to the server for computation purpose.	REST API
5.	Machine Learning Model	The purpose of this machine learning model is to classify the True positives and False negatives of the given image as an input.	Image classification model, pretrained model – Xception, InceptionV2, Resnet. Used transfer learning technique, ensemble technique
6.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local / Cloud Server Configuration.	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The open-source frame works are shown here	Python, Django, Flutter, Xception network, InceptionV2 network, Resnet network
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Microservices, Kubernetes, Catching
4.	Availability	Justify the availability of application (e.g., use of load balancers, distributed servers etc.)	Distributed servers, Monitoring and alerting, Load Balancing
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	The CNN model needs a big computation power so the model is deployed on a high-performance system, and technologies like catching, redundancy are been used to improve the performance.

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d