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

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| Date | 4 Novemberr 2023 |
| Team ID | Team-592942 |
| Project Name | Detecting COVID-19 From Chest X-Rays Using Deep Learning Techniques |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

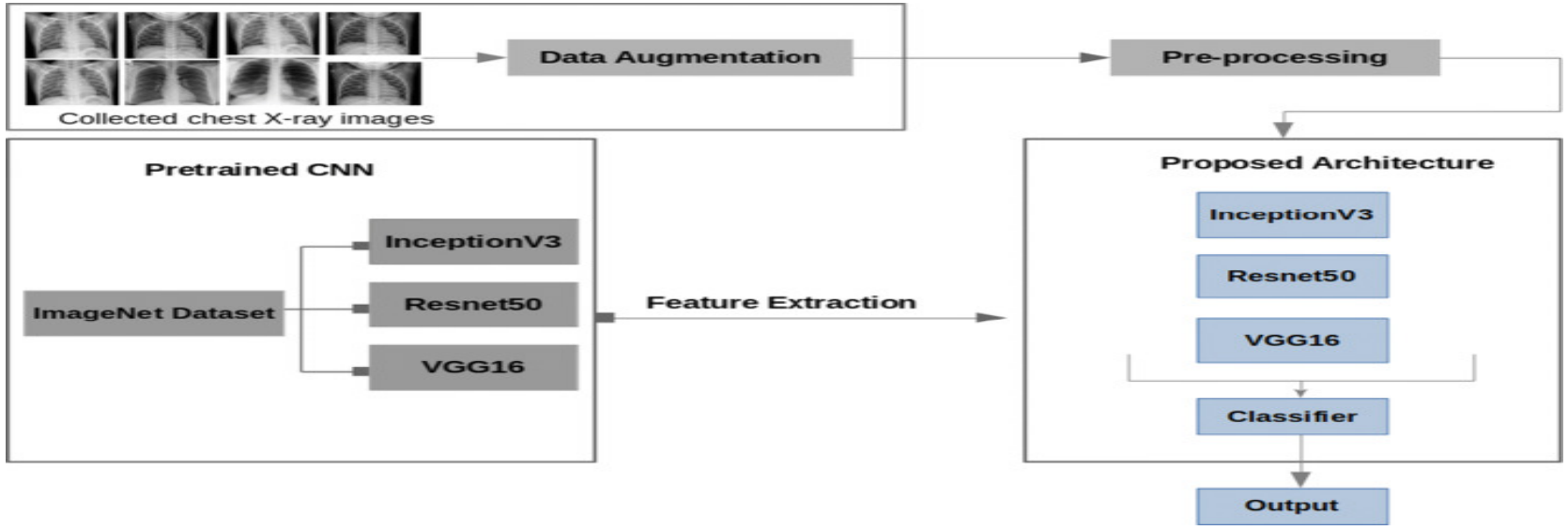

**Table-1 : Components & Technologies:**

| S.No | Component | Description | Technology |
|---|---|---|---|
| 1. | Data Collection | Sources of chest X-ray images (hospitals, online databases) - Web scraping tools (if collecting from online sources) | -. |
| 2. | Data PreProcessing | Python libraries (NumPy, OpenCV) for image preprocessing - Data cleaning and formatting | Python |
| 3. | Convolutional Neural Network | Deep learning framework (e.g., TensorFlow, PyTorch) - Model architecture (VGG16, ResNet, custom architecture) | Python Libraries and frameworks |
| 4. | Training and Validation | Training data for the model - Validation data for model evaluation - Data augmentation techniques | Python Libraries and frameworks |
| 5. | Hyperparameter Tuning | Hyperparameter optimization libraries (e.g., Keras Tuner) | Python Libraries and frameworks |
| 6. | Model export | Tensorflow saved model format | Python Libraries and frameworks. |
| 7. | Web Framework Flask | Flask for creating web application ,Python for backend development | Python FLask |
| 8. | API design | Flask REST-ful API design | Flask RESTful |
| 9. | User Interface | Frontend development of user interface | HTML,CSS,JS |
| 10. | Version Control | To track changes and control | Version Control |

**Table-2: Application Characteristics:**

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 1. | Purpose | Automated detection of COVID-19 in chest X-ray images. | Deep learning frameworks (e.g., TensorFlow, PyTorch) |
| 2. | Target | Users  Healthcare professionals, researchers, and the general public. | HTML, CSS, JavaScript, |
| 3. | Efficiency | The system should provide results quickly and efficiently. | .Backend optimizations, cloud-based computing (AWS, Google Cloud) |

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 4. | Accessibility | Should be accessible online via web or mobile interfaces. | Web and mobile application development |
| 5. | User-Friendly | The interface should be easy to use and understand. | HTML CSS |