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

Date	03October 2022
Team ID	PNT2022TMID16374
Project Name	A Gesture-based Tool for Sterile Browsing of Radiology Image
Maximum Marks	4 Marks

Technical Architecture:

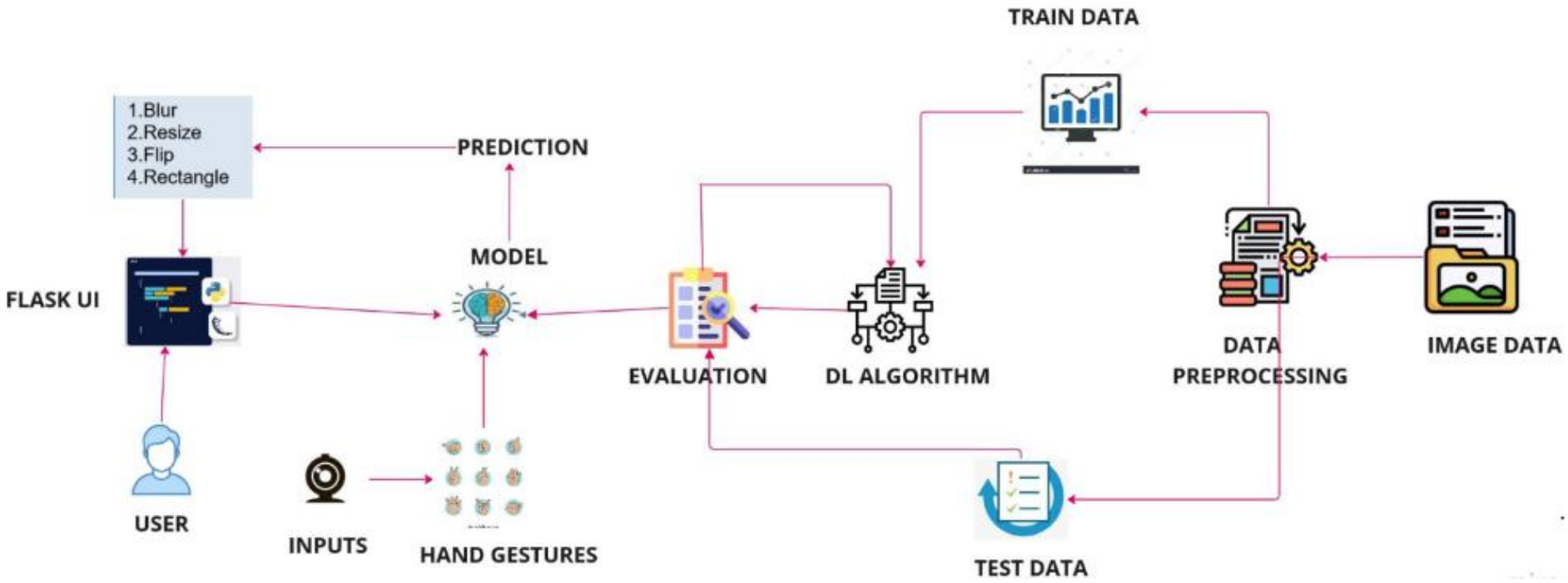

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI	HTML, CSS, JavaScript
2.	Application Logic-1 Image Pre-processing	Input image is pre-processed with the help of library files available in Python like opencv, numpy, scikit-image	Python, OpenCV, Numpy, Scikit-image
3.	Application Logic-2 Building model	Building CNN model to interpret and recognize the gesture with the help of library files available in Python like Keras, Tensorflow	Python, Keras, Tensorflow
4.	Application Logic-3 Creation of app	App is built to obtain gesture as input and to provide corresponding output for that manipulated images	HTML,CSS, JavaScript,Python,Flask
5.	Dataset	Hand gesture dataset with various position for the same hand gesture	From IBM.
6.	Cloud Database	User input image is stored in the cloud	IBM Cloudant DB
7.	File Storage	File storage contains dataset and source code	Local File system
8.	Machine Learning Model	CNN model is used to interpret and recognize the pre-processed image either by image capturing or by video segmenting	CNN Model by Python, Keras, Tensorflow

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-source framework software is used for application development, model training and version control	**Editors:** Visual Studio Code, Atom **Languages and Libraries:** Python, Tensorflow, Keras, JavaScript, OpenCV, HTML, CSS, Numpy, Scikit-image **Framework:** Flask **Version control:** GitHub, GitLens
2.	Robustness	Hand gestures can be captured at different angles and under varied conditions	Scikit-image, OpenCV
3.	Scalability	The system limits the number of user requests to one per second, serve each request on a separate thread	Python
4.	Availability	The application is deployed on a high-performance, reliable server	IBM Cloud
5.	Performance	Light-weight SOTA deep learning model with low inference time	Tensorflow, Keras

References:

Flask Folder:

https://drive.google.com/drive/folders/1a6VhgaR2KZcKGkynQw4bOISLd3IT917m?usp=sharing

Dataset:

https://drive.google.com/drive/folders/1FdfEE_22aEwAQ6UCtnPvUhznpmM4z09v?usp=sharing