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

Date	09th November 2023
Team ID	Team-591588
Project Name	ASL- Alphabet Image Classification
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table2
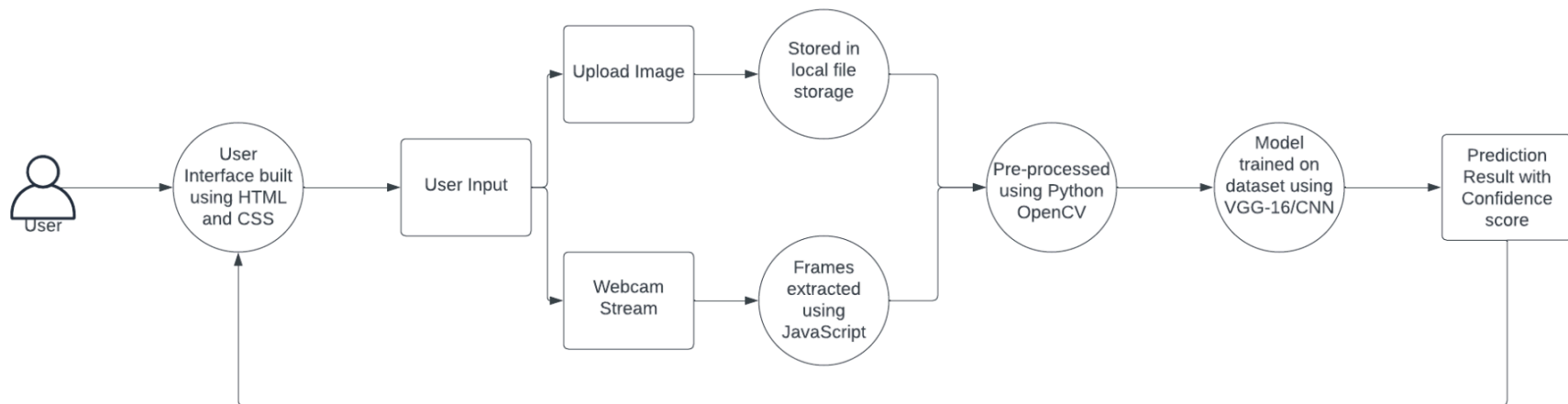

Fig.1: Technical Architecture Diagram for ASL- Alphabet Image Recognition Flask Web Application

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	An interface that allows that allows the user to interact with the Flask Web Application	HTML, CSS, JavaScript
2.	Application Logic-1	Logic for Uploading an Image	Python
3.	Application Logic-2	Logic for using live webcam streaming	Python
4.	Application Logic-3	Logic for frame extraction in webcam streaming	Python
5.	Application Logic-4	Logic for sending images and frames to server	JavaScript
6.	Application Logic-5	Logic for creating the Model	Python
7.	File Storage	File storage requirements	Local Filesystem
8.	External API-1	Used to download dataset and train the model	Kaggle API
9.	Machine Learning Model	Model trained on an ASL dataset containing 29 classes used to recognise an input ASL Sign	Image Recognition and classification Model
10.	Infrastructure (Server / Cloud)	Application Deployment on Local System	Local System

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	TensorFlow, Keras, OpenCV, Flask, NumPy, Socket.IO, Bootstrap, jQuery, Git	TensorFlow, Keras: Deep Learning APIs used to train model OpenCV: Computer Vision software library used to process images and frames Flask: A micro web framework used to develop a web app using Python Socket.IO: A library that enables real time communication between server and browser used for webcam live stream recognition Bootstrap: Front-end framework that makes an app responsive used to get interactive responses JQuery: A JavaScript library used to receive data asynchronously, handle events and maintain compatibility across multiple browsers.