Project Design Phase-II

Technology Architecture

Date	16 October 2022
Team ID	PNT2022TMID26213
Project Name	Project-Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	4 Marks

Technical Architecture:

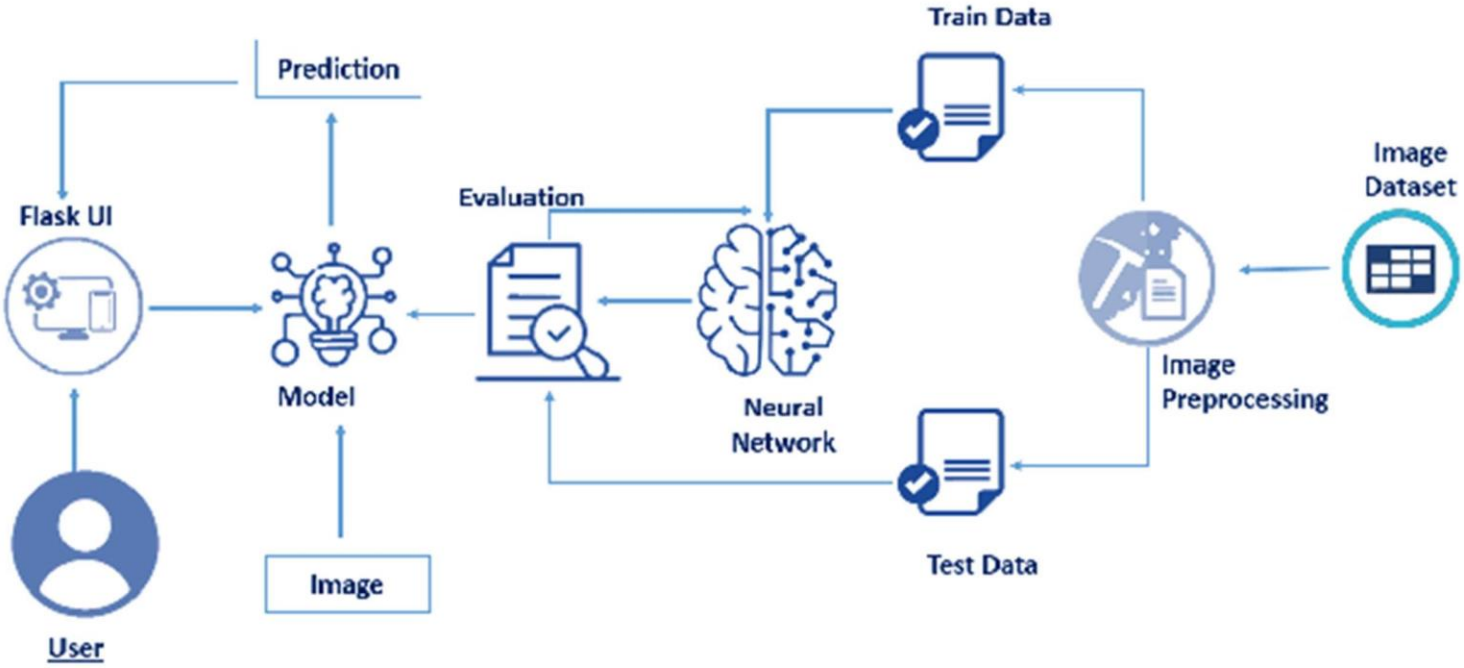

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	User Interface provides options for the user to either upload a photo or turn on live camera for the prediction of sign language	HTML, CSS, JavaScript/React JS
2	Image Prediction	Gesture can be completely observable and viewing a gesture from another perspective makes the prediction.	ANN,CNN
3	Speech	Speech translates the voice into image and sensitive neural play.	AI and machine learning methods like deep learning and neural networks.
4	Database	The user login details and credentials are stored and processed using MySQL database.	MySQL.
5	Cloud Database	We use IBM cloud data storage to store and manage user data.	IBM DB2, IBM Cloudant etc.
6	Models	Support Vector Machine (SVM) is subsequently applied to classify our gesture image dataset.	Machine Learning
7	Testing	The trained model is then run on an additional untested 10-15 sign-language images and the performance parameters are evaluated and recorded	Scikit-learn, NLP

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Flask web application, Google colab	• HTML • CSS • Javascript • Flask • Google colab
2	Security Implementations	Users are authenticated based on their username/password pair and/or OTP sent to their given mobile numbers	SHA-1, Encryptions, IAM Controls
3	Scalable Architecture	The improvement in the specially abled persons interaction with the environments.	Artificial Intelligence
4	Availability	This is an open source application and it is available to all users and it manage all the customers without any network glitch	Technology used Flask web application
5	Performance	The application performs efficiently under a heavy load of translation requests without any significant reduction in the conversion accuracy	Number of requests per minute, accuracy of translation (sign-language to speech & text to sign-language.