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

Date	15 October 2022
Team ID	PNT2022TMID14822
Project Name	Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	4 Marks

Technical Architecture:

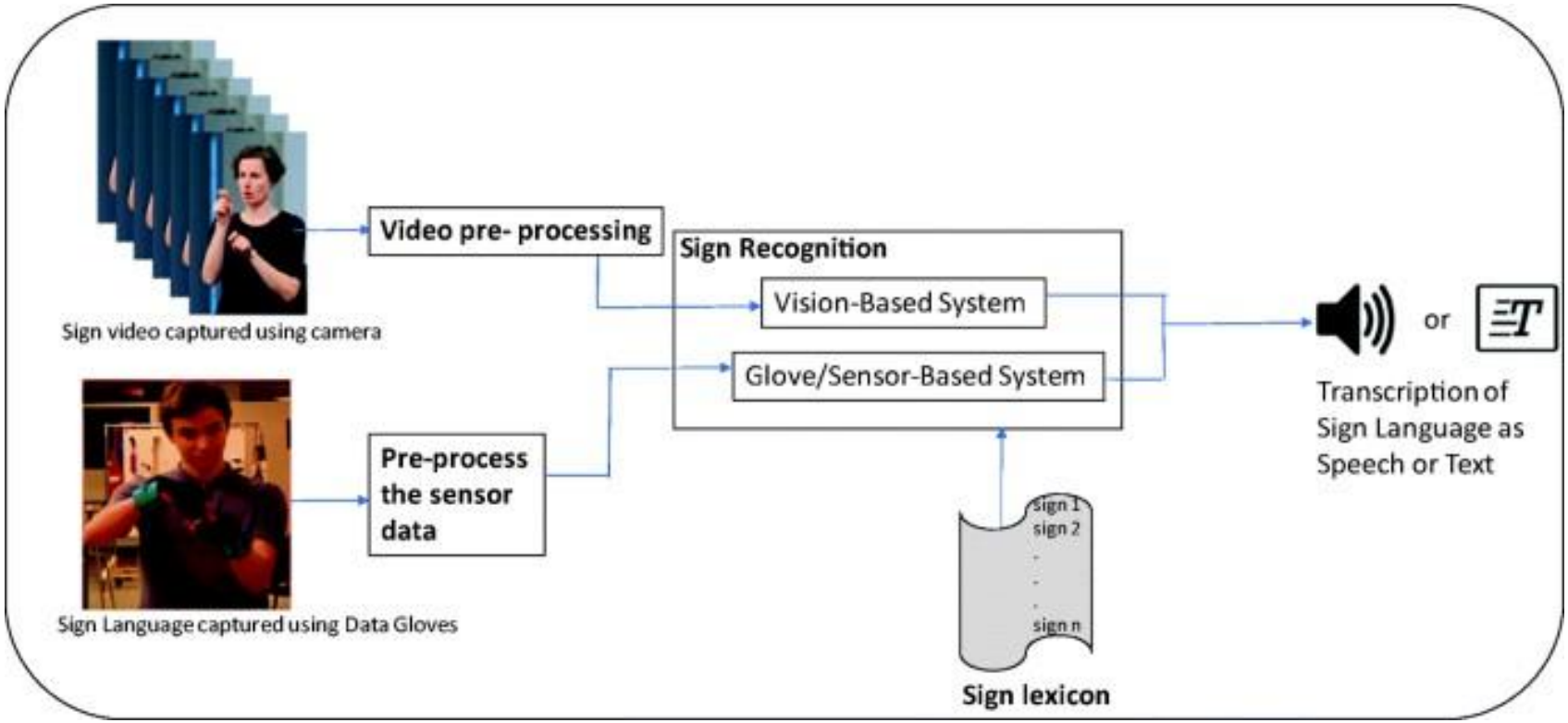

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application i.e. Desktop usage and clicking the concerned app.	HTML, CSS, JavaScript and Angular JS
2.	Application Logic-1	• Camera detects the sign shown by the user. • Captures the sign within ROI.	A face detector is used to differentiate between faces and hand as both involves similar skin-colour
3.	Application Logic-2	Extract the edges of the gray - scale image.	Apply Gaussian-blur filter and threshold to the frame taken with Open CV to get the processed image after featureextraction
4.	Application Logic-3	Convert the output text into speech	The Final text obtained is converted to speech using the speech assistant implemented.
5.	Database	Binary Large Object(BLOB) is the data type used to store the images in the dataset.	MySQL database is used.
6.	File Storage	Create a BLOB column for the image files, whether they maybe JPEG, PNG, PSD or whatever, and then load the images into the table/column, created for them.	Local File system is used for storing the images.
7.	Machine Learning Model	Allows the user to feed a computer algorithm with an immense amount of data , make data-driven recommendations and decisions based on only the input data	Supervised and Unsupervised learning model.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	• Palm detector operates on full images and outputs an oriented bounding box. • Hand landmark takes the cropped image defined by the palm detector and returns 3D hand key points. • Gesture recognizer then classifies the previously computed key point configuration into a discrete set of gestures	• Media Pipe Framework is used. • Within this framework, the pipeline is built as a directed graph of modular components.
2.	Availability	• Hand gestures are the natural way of interactions when one person is communicating with one another • So hand movements are non verbal form of communication. • Hand gesture recognition is a process of • understanding and classifying meaningful • movements by the human hands	CNN, Media pipe, Machine learning models along with Speech assistant is used.