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

Date	03 October 2022
Team ID	PNT2022TMID10160
Project Name	Project – Real Time Communication System Powered by AI for Specially Abled
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

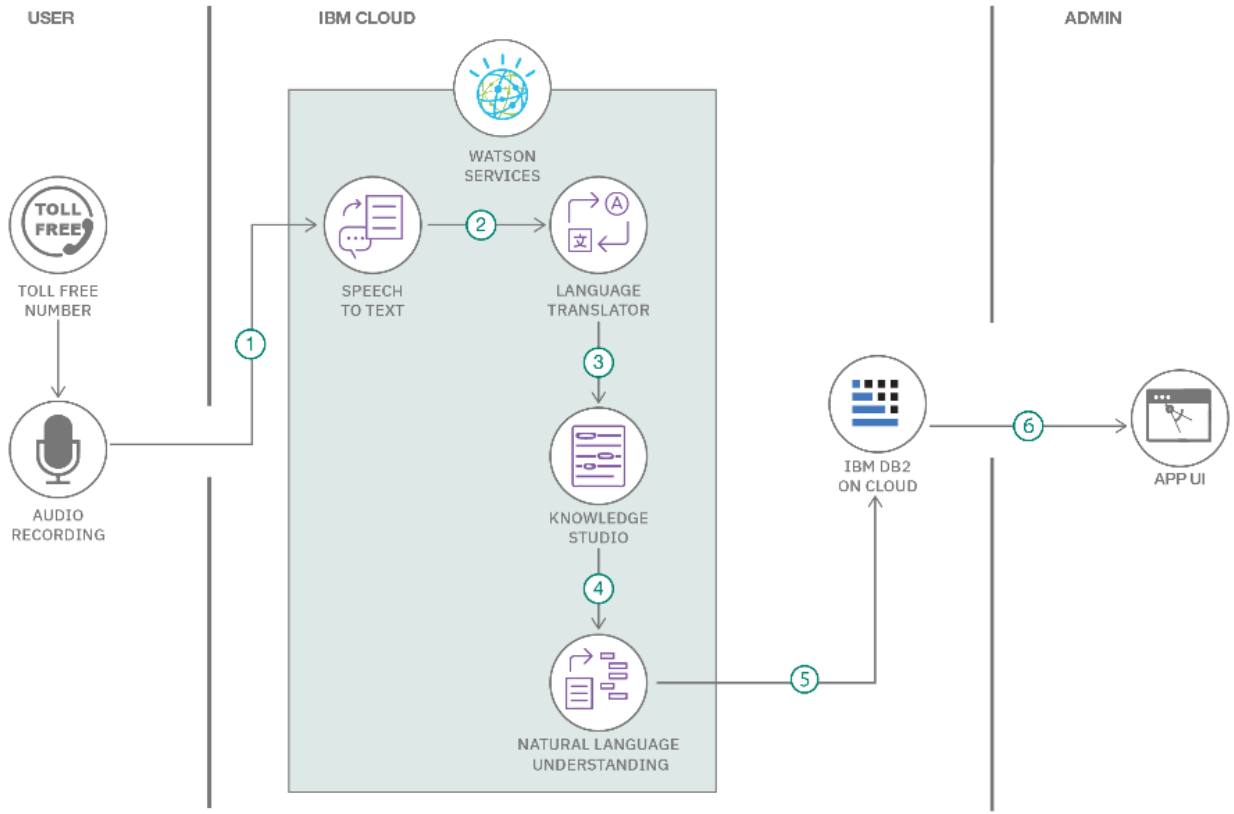

Table-1: Components & Technologies:

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	Logic for a process in the application	Python
3.	Application Logic-2	The camera captures and extract the actions made by the person and analyse with the range of interest.	Adaboost face detector is used to differentiate between faces and hand.
4.	Application Logic-3	Extract the gray-scale image	Using OpenCV and by using Gaussian filter to extract the image attributes
5.	Application Logic-4	Conversion of captured video as text and voice to video. Audio to text conversion is also made	The obtained output is displayed and sound produced to hear what the text is.
6.	File Storage	File storage requirements	Local Filesystem
7.	Machine Learning Model	Purpose of Machine Learning Model	URL detection classification Model.
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud	Local, IBM cloud

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	• Palm detector operates on full images and outputs. • 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.	Scalable Architecture	• Convolutional neural network (CNN) can be scaled in three dimensions: depth, width, resolution. • Depth of the network correlates with the number of layers present within. • Width is associated with the number of neurons in a layer. • Resolution is the image resolution that is being passed to CNN. Increasing the depth, by stacking more	Convolution Neural Network (CNN)

S.No	Characteristics	Description	Technology
		convolutional layers, allows the network to learn more complex features	
3.	Availability	Hand gestures is the way of communication when an impaired person is communicating with another and therefore hand movements can be treated as a nonverbal mode of communication. Hand gesture recognition is a process of understanding the information which is conveyed among the users	CNN, Media Pipe, Gaussian blur filter, Machine learning models and speech assistant models.