

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

Date	16 October 2022
Team ID	PMT2022TMID47628
Project Name	Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	4 Marks

Technical Architecture:

Technical Architecture (TA) is a form of IT architecture that is used to design computer systems. It involves the development of a technical blueprint with regard to the arrangement, interaction, and interdependence of all elements so that system-relevant requirements are met.

PROBLEM STATEMENT:

Statement –

In the recent years, there has been rapid increase in the number of deaf and dumb victims due to birth defects, accidents and oral diseases. Since deaf and dumb people cannot communicate with normal person so they have to depend on some sort of visual communication. A World Health Organization report says around 63 million people in India suffer from either complete or partial deafness, and of these, at least 50 lakh are children. Communication between deaf-mute and a normal person has always been a challenging task.

Description –

The Deaf/Dumb people needs a way to communicate easily and quickly with the normal people, so that the Deaf/Dumb people feel confident enough to express their thought, ideas, and can make conversation with the normal people.

Technical Architecture

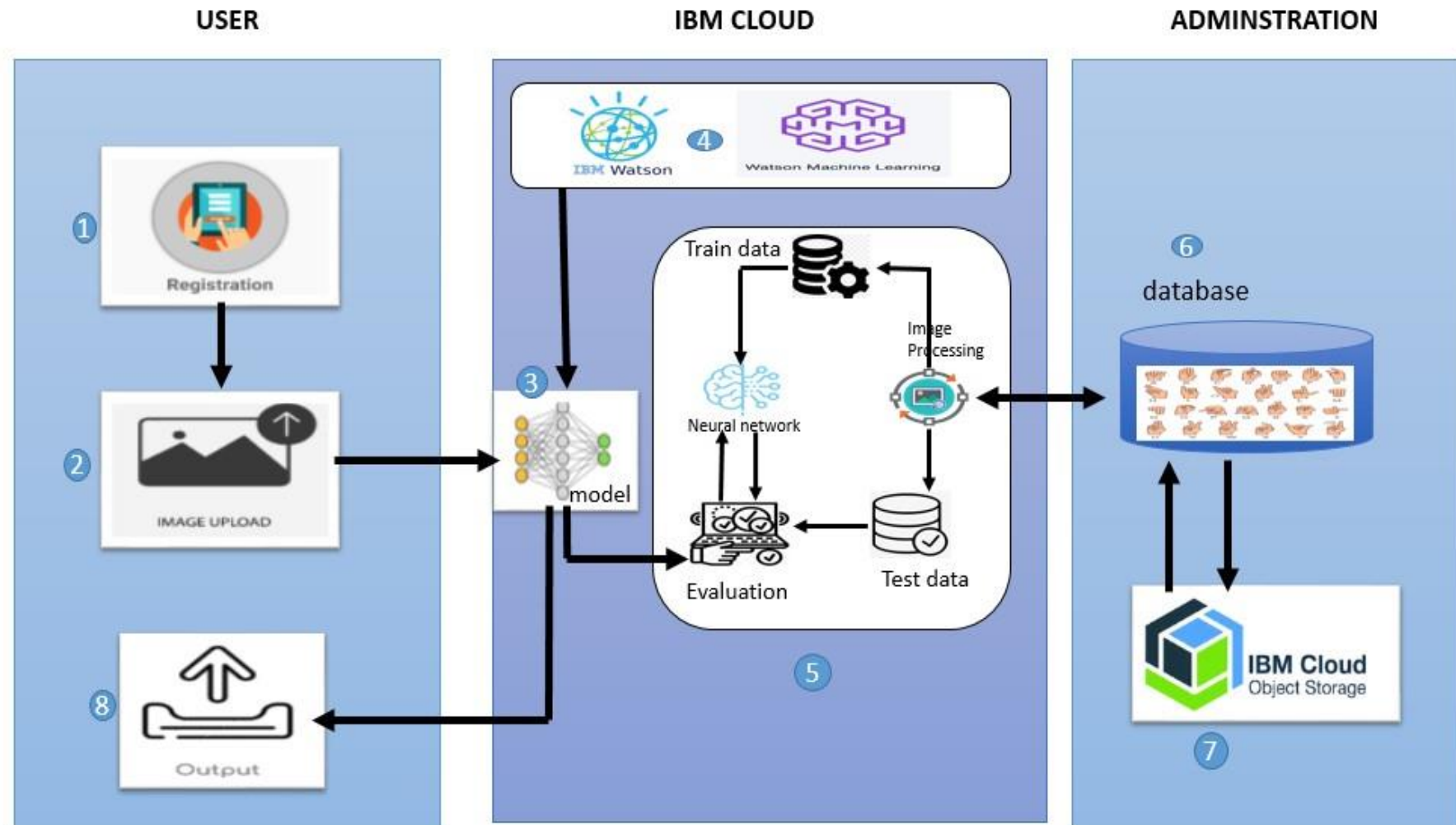


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts with Web application.	HTML, CSS/JavaScript
2.	Upload image	User can upload or show the sign language in the web application	Web cam
3.	MODEL	Used for image recognition and tasks that involve the processing of pixel data	CNN
4.	Code	Python is a popular programming language. Python can be used on a server to create web applications.	Python
5.	Database	NoSQL Database	Cloud and database
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant
7.	File Storage	File storage requirements	IBM Block Storage or Cloud object storage
8.	ML service	Provides a full range of tools and services so that you can build, train, and deploy Machine Learning models.	Watson Machine Learning service
9.	IBM Cloud	IBM Watson Studio empowers data scientists, developers and analysts to build, run and manage AI models, and optimize decisions anywhere on IBM Cloud Pak for Data.	IBM Watson Studio service
10.	Machine Learning Model (CNN)	The process of identifying an object or a feature in an image or video	Image Recognition
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: 64 bit 4GB Cloud Server Configuration : 1Vcpu 4GB RAM	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Helps you implement best practices for data automation, model tracking, performance monitoring, and model retraining.	Tensorflow
2.	Security Implementations	It operates the largest national network of professional monitoring centers and offers a sixmonth, money-back guarantee to customers	ADT-Best Security System , Simplisafe - Best Security System
3.	Scalable Architecture	Three-tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers: the presentation tier, data tier, the application tier.	3 – Tier Architecture
4.	Availability	Enables deaf and dumb people to convey their information using signs which get converted to human-understandable language	Web Application
5.	Performance	We are making use of a convolution neural network to create a model that is trained on different hand gestures. An app is built which uses this model.	CNN