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

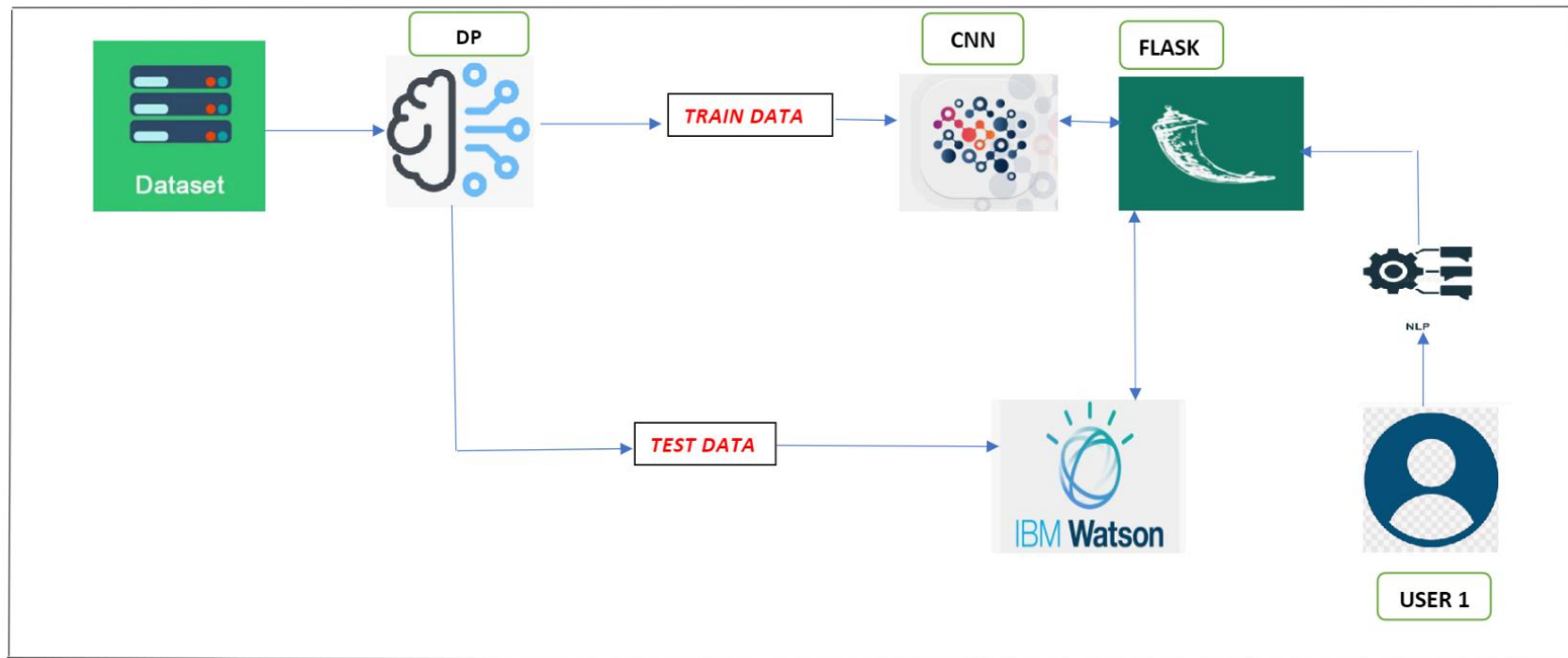| Date	21 October 2022
Team ID	PNT2022TMID03512
Project Name	Project - Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	The application can be accessed using Web UI and mobile application for the user to interact	HTML, CSS, Python
2.	Application Logic-1	Capturing and storing the sign language images as dataset	Python
3.	Application Logic-2	Analysing the sign language pictures and represent the hand gestures	IBM Watson, Python, CNN
4.	Application Logic-3	The input data is given by getting audio	IBM Watson, Python, CNN
5.	Database	Pictures of the sign language gestures and their description	MySQL, JavaScript, IBM DB2
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	The sign language pictures and the input audio clips are stored in the cloud	IBM Block Storage, IBM cloud, Local Storage
8.	CNN – Convolutional Neural Network	Purpose of CNN is to decode the sign language into the readable language and vice-versa	CNN, Object detection model, NLP
9.	Machine Learning Model	Purpose of AI-Machine Learning Model is used to recognise the hand gestures, sign language and vice-versa	Object Recognition Model, CNN and NLP for voice data and hand gestures
10.	Infrastructure (Server / Cloud)	We will deploy the AI and CNN model using flask in the web application of cloud server	Python flask

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-Source framework used in IBM Watson	Technology of Opensource framework
2.	Security Implementations	IBM cloud	IAM Controls, OWASP
3.	Scalable Architecture	Database Server- On the basis of new applications acquiring from the user, the dataset can be modified accordingly. Application Server- While updating of dataset takes the integration of the application as per user demands and requirements can be done.	IBM Watson Assistant, MySQL, Python
4.	Availability	The AI and CNN model is available instantly when in need without any modifications process can be made	IBM Watson Cloud Assistant
5.	Performance	IBM Watson and the cloud is used to store data where the deep learning and NLP model is used for training of hand gestures(data). By using IBM Watson studio better performance and convenience.	IBM Watson Assistant, NLP