

Project Design Phase-II

Technology Stack (Architecture & Stack)

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| Date | 15October 2022 |
| Team ID | PNT2022TMID44103 |
| Project Name | Real-Time Communication System Powered by AI for Specially-Abled |
| Maximum Marks | 4 Marks |

Technical Architecture:

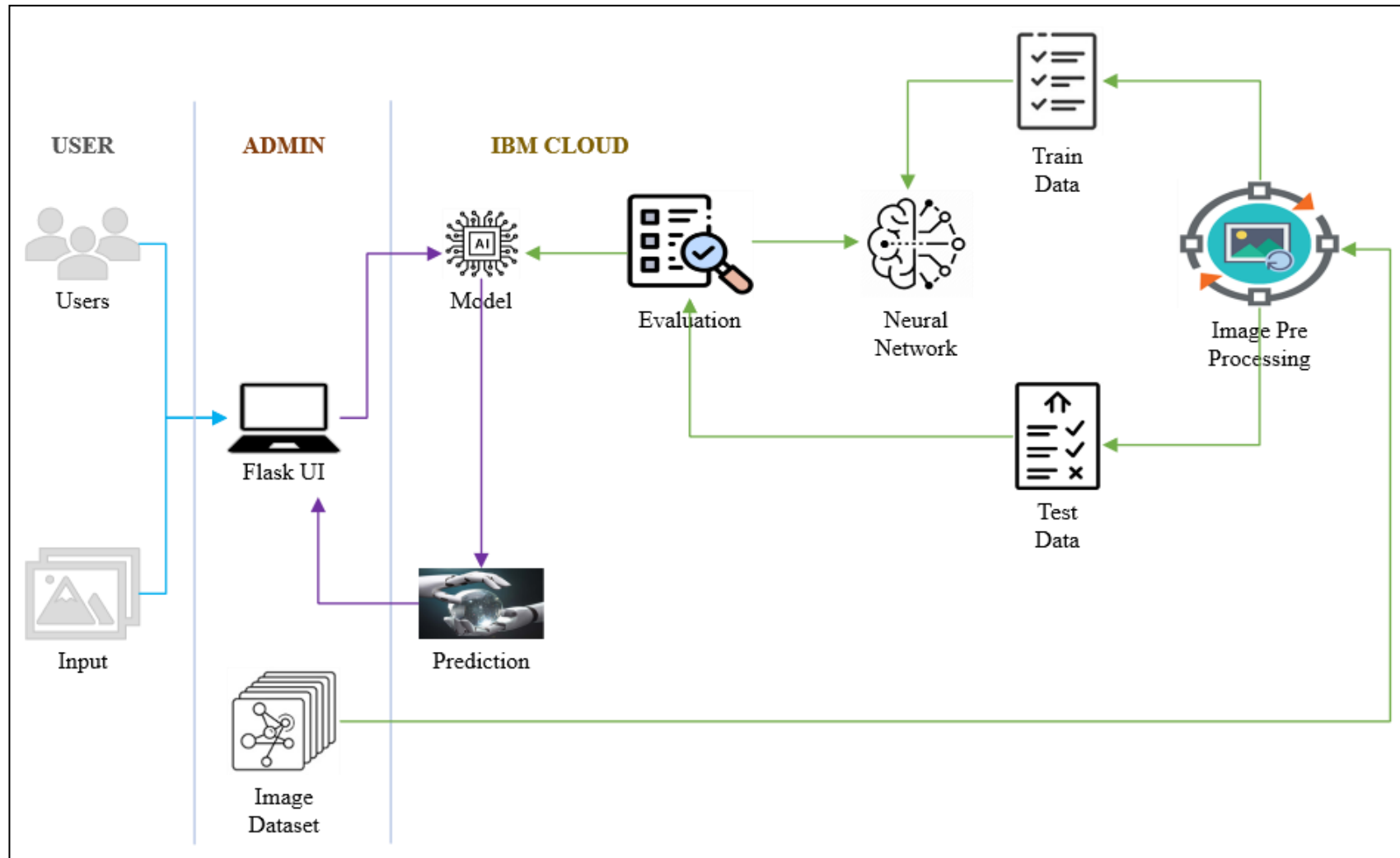


Table-1 : Components & Technologies:

| Si. No. | Components | Description | Technology |
|---------|-------------------|---|---|
| 1. | User Interface | The user interface is the point of human computer interaction and communication in device. | Python flask, HTML, CSS/JavaScript. |
| 2. | Flash UI | Flash's user interface components let you interact with the users that use your site and gather information. | Using the cloud, it can be executed. |
| 3. | Models | Support Vector Machine (SVM) is subsequently applied to classify our gesture image dataset. | Machine Learning. |
| 4. | Image | Image processing is used to extract signs from the image using neural network. | ANN, CNN, Open CV. |
| 5. | Evaluate data | Aims to estimate the generalization accuracy of a model on future (unseen/out-of-sample) data. | NLP. |
| 6. | Unstructured data | Unstructured data is a conglomeration of many varied types of data that are stored in their native formats. | Natural Language Processing (NLP). |
| 7. | Structured data | Typically categorized as quantitative data is highly organized and easily decipherable by machine learning algorithms. | Machine language and artificial intelligence tools. |
| 8. | File Storage | File storage requirements to store the trained model in order to use it whenever it is needed. | IBM Block Storage or Cloud object. |
| 9. | ML service | Provides a full range of tools and services so that you can build, train, and deploy Machine Learning models. | Python, IBM Watson. |
| 10. | 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 Cloud and Watson Studio service |
| 11. | Dataset | First prototype of this system used a dataset of 24 static signs from the Panamanian Manual Alphabet. | AI technology. |

Table-2: Application Characteristics:

| Si. 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 centres and offers a six-month, money-back guarantee to customers. | ADT type of coding. |

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|----|-----------------------|---|---|
| 3. | Scalable Architecture | Three-tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers: the data tier, the presentation tier and the application tier. | 3 – Tier Architecture. |
| 4. | Availability | The system will be made ubiquitous so that it is available everywhere. | Web Application. |
| 5. | Performance | The model will be fine-tuned to strike a balance between accuracy vs performance. | Optimization of code and trained model. |