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| Date | 13 October2022 |
| Team ID | PNT2022TMID |
| Project Name | Real-Time Communication System Powered by AI for Specially Abled |
| Maximum Marks | 4 Marks |

**Data Flow Diagrams:**

Key points Extraction

Landmarks Detection

Install and import Dependencies

Data Collection

Build and Train LSTM mode

Prediction

Evaluation Using Confusion matrix

Test in Realtime

**Flow:**

• We start by collecting key points from media-pipe holistic and collect a bunch of data from key- points

• Save data in the form of numpy arrays.

• We then build a LSTM model and train with our stored data

• The number of epochs for the model is determined by us, if we increase the number of epochs the accuracy increases but time taken to run the model also increases and overfitting of model can happen, for gesture recognition.

• Once training is done, we can use this model for real time hand gesture detection and simultaneously convert the gesture to speech using OpenCV.

**User Stories**

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| **User Type** | **Functional Requirement (Epic)** | **User Story Number** | **User Story / Task** | **Acceptance criteria** | **Priority** | **Release** |
| Developer | Data Collection | USN-1 | Collect Dataset |  | High | Sprint-1 |
|  |  | USN-2 | Collecting Key points using Media Pipe Holisitic |  | High | Sprint-1 |
|  | Model Building | USN-3 | Model Initialisation with required layers |  | High | Sprint-2 |
|  |  | USN-4 | Training model using LSTM from key points collected |  | Medium | Sprint-2 |
|  | Testing | USN-5 | Testing the model’s performance |  | High | Sprint-3 |
|  |  | USN-6 | Convert text to Speech using google API |  | Medium | Sprint-4 |
| Customer (Web user) | Communication | USN-1 | Communicating in Front of camera | Communication isn’t enabled if the person isn’t communicating in front of the camera | High | Sprint-1 |
|  |  | USN-2 | Speech and text are delivered by web interface | The sign language is converted into text and speech | High | Sprint -4 |