Functional Requirements:

- Here , **Desktop along with Camera is presented as black box.**
- Deaf/Dumb is the person, who will **show different signs based on the type of information being conveyed.**
- **Normal Person is the passive user** of the desktop.

The **System requirements** that are required are specified below,

- Deaf/Dumb person should be able to **perform a sign that represents digit/number.**
- Deaf/Dumb person should be able to **perform a sign that represents a character.**
- Deaf/Dumb person should be able to **perform a sign , where group of characters forms a word.**
- Deaf/Dumb person should be able to **perform a sign, where group of words forms a sentence.**
- Especially Deaf person should be able to **see the translation of sign to text format.**
- Dumb person should be able to **understand the conversion of text into voice mode.**
- **Normal user should be able to understand the corresponding information conveyed by disabled through sign language.**

Hardware Requirements	Software Requirements
Web Camera – (320x260 minimum)	**Operating System platform – Windows 7 and greater**
Processor – 400 MHz or above	**MySQL Database**
RAM – 512 MB or above	**AdaBoost Face detector**
Hard disk – atleast 256 MB free	**HTML,CSS,JavaScript and Angular for Webpage**
Speaker with a sensitivity of 87-88 DB	**MediaPipe framework**

Default Operation:

- User of the app **faces the camera and perform the concerned hand sign to convey information.**
- System/Desktop **analyses the sign made by the user**.

- Once analysis gets finished, then the **concerned signs together are shown as a text based and also through voice.**

Unexpected Operations:

- **Desktop indicates that user's hand sign is not within the frame or in Region of Interest(ROI).**

    1. User of the app **show the hand sign towards the camera**.
    2. Desktop shows that **sign is not within ROI**.
    3. Still User , make sure to present his/her sign within frame.
    4. At last, **Desktop finally detect the hand sign**.

- **Signs are not recognized**

    1. **Excepts the signs that are trained and included in the dataset, the Desktop will never detect the sign rather than this.**
    2. User Performs the sign and see that after 50ms, **the concerned letter occupy in the space of text.**

- **Speech/Voice assistant is implemented**

    Speech assistant is to be implemented in order to **convert the output text into voice .**