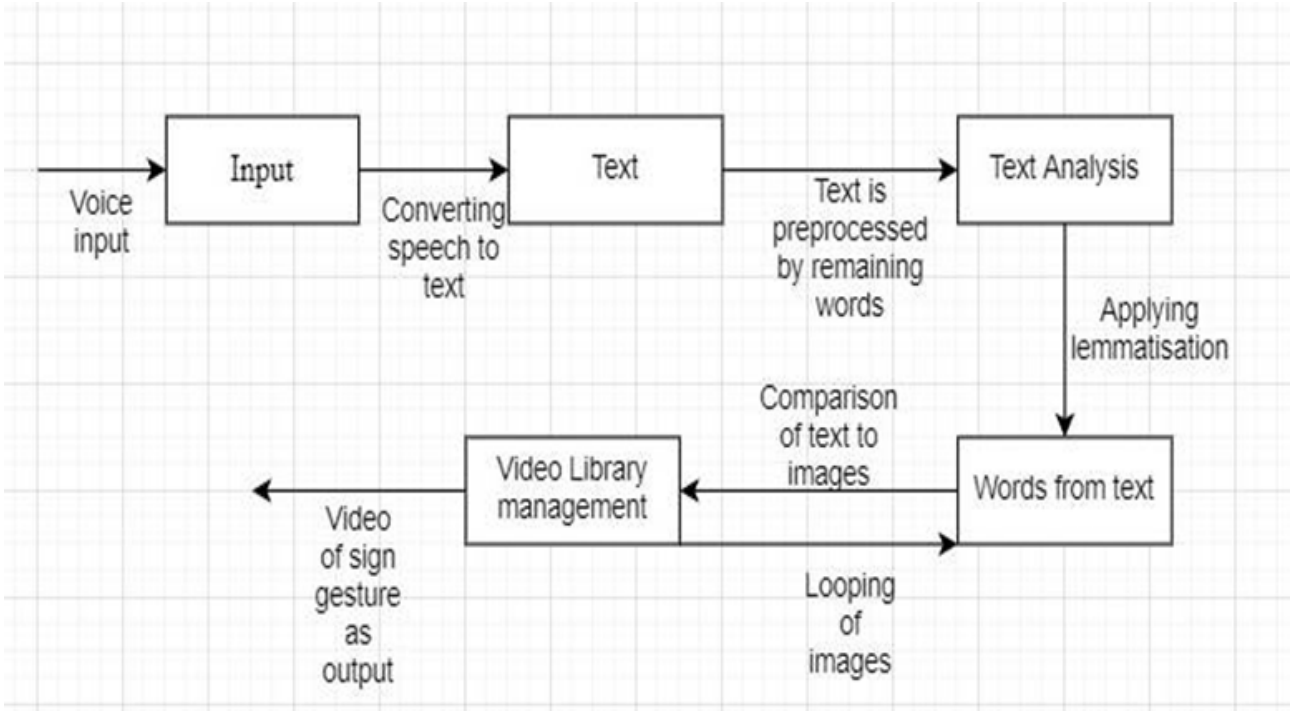
Online Class For Deaf And Dumb

The project that we did is a web page that converts the live audio into sign language, this is a small step towards creating a bridge of communication between the people who don't know sign language and as well the people of the deaf and dumb community. The future goals is to make this web page into being able to detect many other languages so the diversity of the usage can increase and then the usauge might increase which will increase the communication between the non singing people and the deaf and dumb comminity people.

There are many apps and web pages that can convert audio to text and text to sign but we wanted to merge both and do, and while doing some research on the conversions we came across a app called HAND in the app store which can convert audio or text into sign language, and that gave us a spark in our heads of giving a gif animation for the sign language. So we made a web page that can take live audio and convert it to text using the WebKit speech recognition that converts the audio to text as well and after getting the text we used a few natural language concepts which are POSTagging and Lemmatization.This POSTagging tag each word in the sentence with the respective tene of it and then the majority of the tense in the sentence it given as the tense of the whole sentence , then we remove the stop words and after the removal the Lemmatization process is

done which splits the sentence into words and in that we add .mp4 to th word and if the animation of the respective word is there in the dataset then we show the animation elese the word is further broken down into letters and then .mp4 is added and is shown.



Modules Involved:

1. Getting input from User:

- Users can provide input in two ways. Users can use the mic symbol button to record the speech.

- Another way, users can type manually in the given text box.
- If User gives the input manually in the text box, the second module which is conversion of audio to text can be ignored.

2. Conversion of Audio into text using JavaScript Web Speech API:

- When User gives input in the form of audio, then the audio will be converted to text and displayed in the given text box.
- The audio can be recognized in various accents like American accent, British Accent or Indian Accent.
- According to the accent, the text will be recognized from the audio and displayed.

3. Text analysis by removing stop words:

- After recognizing the text from audio, the text will be analysed using the NLTK library.
- In this module, the acquired text will be pre-processed by removing stop words from the text.
- Stop words are a group of words that are widely used in a language. Stop words in English include "a," "the," "is," "are," and others.
- Stop words are frequently used in Text Mining and Natural Language Processing (NLP) to exclude terms that are so widely used that they contain very little meaningful information.

4. Text mining by applying lemmatization:

- In this module, after removing stop words from the text, the pre-processed text will be processed using the lemmatization method which is available in the NLTK library.
- Lemmatization typically refers to doing things correctly by using a vocabulary and morphological analysis of words, with the goal of removing only inflectional ends and returning the base or dictionary form of a word, which is known as the lemma.
- The reason why we chose lemmatization over stemming is that Lemmatization accuracy is more as compared to Stemming, and Lemmatization would be recommended when the meaning of the word is important for analysis.

5. Display the corresponding sign language video:

- After the text mining process is finished, all of the processed words will be saved in a list, and the text of sign language videos will be compared to words in the list.
- Displaying the matching video to the user for the word in the list. There will be a play/pause button, and you will be able to pause and play the video whenever you like.