Basic Details of the Team and Problem Statement

Problem Statement Title: L.I.S.A (Learning Interpreter For Specially Aided)

Team Name: SPYS

Team Leader Name: Pradeepta G

Domain : Software

Theme Name: Healthcare and Disabled

Idea Details

| Audio To sign language conversion | Speech to text recognition | Text summarization | Question answering system | Question generation |

Describe your idea/Solution/Novelty here:

- Our idea is to create a model that contains audio to sign language conversion along with some NLP techniques like speech to text conversion, text summarisation, question answering system and question generation.
- Our goal is to offer deaf and mute students a comprehensive learning environment under one roof.
- Our intention is to reduce the need of a sign language interpreter by creating a suitable user interface with all the above mentioned features.
- Students can get a chance to join any university of their choice and feel more inclusive.

Describe your Technology stack/Hardware used here:

- Audio to sign language conversion for real time understanding of the lectures in their native language.
- Speech to text conversion can be used to convert the voice input of the lecturers into text if needed. This could be easier for them to catch up with the lectures.
- Text summarisation can be used to provide a summary from the text generated from the lecture.
- The question answering system can be used to ask questions based on the lectures and get answers automatically by the model.
- Question generation system can provide self assessment based on the lectures.
- We can implement the above mentioned features using flask, BERT transformer, Microsoft voice typing

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Idea/Approach Details

Describe your Use Cases here

 use case 1:
Description: A person wishes to attend live lectures using audio to sign language conversion
Preconditions: a laptop with a proper microphone

➢ **use case 2:**
Description: A person wishes to summarize the text
Preconditions: the transcript generated has to be fed into the website and there should be a feasible internet connection.

➢ **use case 3:**
Description: Question generation for self assessment
Preconditions: transcript generated along with internet connection

Region of Impact (the target audiences)

Primary users:
- Specially Aided school/college students

Secondary users:
- Any student who cannot attend the class actively can make use of this.

List of beneficiaries:

- Students with hearing and speech impairments.
- Students who cannot attend the class regularly.
- Educational institutions.

Idea/Approach Details

User Experience

- This idea may be beneficial for both the intended audience and ordinary lectures in addition to the target audience.
- Regular lectures with more visuals may be more effective for students with these difficulties.
- Visual instruction has been shown to be an effective teaching method.

Describe your Dependencies / Show stopper here

- Accuracy and Reliability: One of the most critical show stoppers would be the accuracy and reliability of the model. Any errors in the conversion process or inaccuracies in the information presented to the students could lead to confusion and misunderstandings.

- Complexity of the Model: Another potential show stopper could be the complexity of the model. Integrating multiple NLP techniques and building a model that can handle various types of audio inputs could be challenging and time-consuming.

- User Acceptance: Even if the model is accurate and reliable, it is essential to consider whether the user interface is user-friendly and whether the deaf and mute students will be comfortable using it.

- Cost: Building such a comprehensive learning environment could be expensive, and it is important to consider whether the benefits of the system outweigh the costs.

Team Member Details

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