# CEN 4020: Software Engineering I, Fall 2019

**Florida State University**

1. **Project title**

*List the title of your project.*

1. **Brief overview of what you are proposing**

We will build a web page that performs translation for the user. This web page will listen to a voice, turn what it hears into text, translate that text into a specified language, then read back the translated sentence. We will have a language selector for both the input and the output audio, as well as a specifier for where the input audio comes from. Audio input may come from a live voice recording, a pre-recorded audio file, and possibly YouTube videos.

1. **Motivation**

We wish to create an audio translator project because translation AI is becoming more and more prevalent as the necessity to communicate globally increases. Our idea is inspired by a Microsoft holiday advertisement for the new Microsoft Translator (viewable here <https://www.youtube.com/watch?v=nnmy7IPE08I>) where a woman hears Japanese translated to English in real time with people she is video chatting with. As far as accessibility, currently there is no free software to translate the audio of videos, and we want to implement video audio translation for this purpose as well.

1. **Features to be implemented and types of users**

- The user can choose any combination of input and output from the top 5 languages: Mandarin, English, Hindustani, Spanish, and Arabic.

- Service will provide translation for the following sources: text, speech, files, potentially more.

- The output will be a downloadable text file that can be viewed on the page, output as audio to the user’s speakers, or emailed to the user as text or mp3 (There would be a button to implement these functionalities).

- Speed of translated audio can be changed by the user to either normal speed or slower.

- As the user speaks into the microphone, the audio’s waveform will be viewable so they can see they are being recorded.

1. **Risk / Challenges**

Risks:

Deprecation of any of the following libraries: speech\_recognition, speech2text, wtf, etc.

If some functionality of the Google API/libraries is not functioning or will not properly merge with other parts of our code, we cannot go into the libraries and change source code.

Challenges:

Effective Communication between 6 group members.

1. **Existing related projects**

Google translate – our project will add the functionality to the beginning of the translation process: being able to speak into the translator(rather than only being able to type) and being able to specify input as live audio or recorded audio(rather than just accepting user text).

Microsoft Translator – this translator translates languages in real-time. This was the inspiration for our project, but we will not be able improve on real-time translation.

1. **Intended platform / programming language**

Python, HTML, CSS, Javascript. This will be a web application.

1. **Third-party libraries / APIs to be used**

This project will be utilizing Flask which is a web framework for python. WT Forms will be used to gather user input throughout the project​ for all the different options and features that the user will have. ​The library speech\_recognition is used to listen to provided audio ​whether that be the computer's microphone or a given audio file. ​PyAudio must be downloaded in order to ​make use of this. After reading in the audio we will use a few of ​Google's API's. We will use Google's “speech to text” API to translate the ​inputted audio to text. We will also use the google translate API to translate text from​ one language to another. Google “text to speech” API will be used to read​ back translated text to the user or save that output audio to the user’s computer.

# Team members, expertise, project responsibilities, and team organization

James Keifer Hudson – jkh17

expertise: C++, C, Python, Java

roles: backend development, **backend manager**

Sabrina Pinera – sp17m

expertise: C++, Java, Python, web design, HTML, CSS, Javascript

roles: frontend development

AJ Centrone – ajc18j

expertise: C++, Web design, mobile design, HTML, CSS

roles: frontend development, **frontend manager**

Diego Castro – djc16j

expertise: C++, Python

roles: backend development and frontend development

Daniel Jamsheedy – dtj17

expertise: C++, Java, Python

roles: backend development

Abby Mortensen – am17ad

expertise: Python, mySQL

roles: backend development

Organization - Github for code merging, a text group chat for contacting one another. February and March: once every two weeks. April: once a week.