

## **ECE49595NL: Natural Language Processing**

*Spring 2025*

Homework 1

Due 5pm Friday 14 February 2025

For this homework, each team will construct a spoken text editor to edit and run simple Python programs. Your text editor should have the ability to write, edit, and run a program purely with speech input, without touching the keyboard and mouse. The programs will be simple. Something like computing factorial or counting the number of vowels in a string. The program will take a single string as input and output a single string.

We wish you to be creative. You can design the program to operate as you wish. It can be based on Eliza, GPT, a combination, or something else. We provide keys for use of Microsoft Azure speech-to-text and text-to-speech, and also for Microsoft Azure OpenAI GPT. You can use these if you wish. You are also free to use other speech-to-text, text-to-speech, and language-processing systems.

Your system should allow you to run the program with spoken input. The overall goal is to produce a system that allows one to write, run, and debug simple Python programs efficiently purely with spoken computer interaction. While a simple system would accept commands to move the cursor and insert and delete characters, such an approach would be tedious and inefficient to use. Thus we hope you will be creative in using facilities like GPT to make a system that is convenient to use.

We will measure this by conducting competitive time trials. We will hold these at a time and location to be determined. We will give a surprise simple coding task each time. Each team will have the same coding task. Teams will use their system to solve the coding task with speech alone. Teams will be timed for how long this takes and be ranked.

This is an ambitious exercise. Do not leave this to the last minute. The details of this will be fleshed out as we go along.