Pronunciation Improvement Using Speech Recognition

**Project Description:**

The goal of this project is to develop a pronunciation improvement tool using speech recognition and analysis techniques. The tool will allow users to speak words, and the system will provide feedback and suggestions to help improve their pronunciation.

**Project Tasks:**

1. Implement a speech recognition module that captures audio input from the user using the microphone and converts it to text.

2. Integrate a pronunciation analysis library or algorithm to analyze the captured word and provide feedback on its pronunciation.

3. Develop a feedback mechanism to notify the user about their pronunciation errors and suggest improvements.

4. Design an interactive user interface (UI) for the pronunciation improvement tool, allowing users to input words, receive feedback, and view suggested improvements.

5. Test the tool using a variety of words and speech samples to evaluate its accuracy and effectiveness in improving pronunciation.

6. Optimize the tool's performance and user experience based on user feedback and testing results.

7 . Create documentation that includes an explanation of the implemented techniques, instructions for using the tool, and a discussion of the project's limitations and potential future enhancements.

**Project Deliverables:**

1. Python code implementing the pronunciation improvement tool.

2. Documentation describing the project's design, implementation details, and usage instructions.

3. Presentation slides summarizing the project's objectives, methodology, results, and conclusions.

**Additional Considerations:**

Resources: Students can utilize existing speech recognition libraries (e.g., SpeechRecognition, Google Speech Recognition) and pronunciation analysis tools (e.g., nltk, phonetics) to implement the project. They should also reference relevant research papers, documentation, and online resources.

Evaluation: The project will be assessed based on the quality of the implemented features, the accuracy of pronunciation analysis, the usability of the user interface, the completeness of the documentation, and the clarity of the presentation.

This project provides an opportunity for students to apply their knowledge of speech recognition, natural language processing, and user interface design to develop a practical tool for pronunciation improvement. It encourages students to explore and experiment with various techniques and libraries to enhance their understanding and skills in these areas.

Timespan: before the end of the current Spring Term 2023.