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## Project Proposal

### **The Project: Rap Battle Bot**

The Rap Battle Bot interacts with the user to create a rap battle experience, in which verses are exchanged between human and bot. Generally, the user speaks a short lyrical verse into the microphone, and is prompted with a counter verse pertaining to the user's original words. The application uses Markov chains and text prediction to process data inputs to generate its response.

### **How This Is Achieved**

In order for this to work, the application need two key components: an audio input and a sample text. First, the application is fed an audio input in the form of a .wav file, the SpeechRecognition module transcribes the text, returning the words spoken in the form of a string. The keywords of the transcribed text are stored and later used for comparison to generate a counter verse. When the application is fed a sample text, it iterates through the file, looking at each pair of two words. It stores the pair in a dictionary that represents the probability of those two words being used together. Finally, the application generates a response from the dictionary info that contains original keywords from the transcribed audio input.

### **Modules and Technologies Used**

- SpeechRecognition Module
  - used to convert audio files into text form
  - takes in .wav files and returns a string with the transcribed audio
- PyAudio Module
  - used to record audio files into wave format
  - used to process audio

- OS Module
  - used to search through and access files in a directory
  - audio files given to SpeechRecognition
  - text files given to Markov chain processing
- Markov Chains
  - used to generate a counter verse, based on given text and audio inputs
  - represented in a dictionary that stores the probability of available responses
- Tkinter Module
  - used to create visual user interface
  - user is able to choose between uploading a text file, uploading an audio file, or generating a verse