Assignment - 3

Speech to Text: Extract Keywords from Audio Reviews

Objective: Convert audio reviews of a product to text and identify which features of the product are being discussed.

Problem Statement:
After the success of Tap Portable Bluetooth Speaker, Amazon is about to launch a new version in the market. To understand which of the features customers liked, Amazon did a focus group discussion with some selected customers. The audio in the discussions has been recorded. The reviews that the panelists gave to Tap is what interests Amazon.

As the data scientist, your task is to convert the given audio file to text, assess which features of the Bluetooth speaker are being talked about in the audio reviews. In module 3, we extracted the top 15 features from the reviews. We can use this as our feature list, assess which of these are present in the audio reviews.

Also, for future utility and immediate analysis, you need to make a process or function that captures audio from the microphone, converts to text, analyses, and returns the features discussed in the audio.

Domain: General

Analysis to be done: Convert speech to text and analyze converted text. Make generic module to capture audio from microphone and analyze it.

Content:
Data files: “Recording2.wav”, “Tap Review.wav”.

Steps to perform:
You’ll use the record utilities to ‘record’ from a given audio file, and then use Google API to convert to text. Then, we’ll identify which of the product features (defined in a list, obtained from the previous analysis on tap reviews) are being talked about in the audio review file provided. Finally, you’ll use the microphone to record audio , convert to text, and identify the product features being discussed in the text.

Tasks:
From speech_recognition module. Instantiate the recognizer class from the utility.

1. Load the given audio file "Recording2.wav" - this contains a sample audio for you to get comfortable with the module, use the 'AudioFile' method.
2. With this as a source, 'record' the audio from the file.

3. Using 'recognize_google' method, convert the audio to text.
4. Create a function to return the text for any given audio file (.wav format) as input.
5. Apply this function to the file 'Tap Review.wav' to extract the text from the audio review from the Amazon Tap focus group discussions.
6. Preprocess the text and tokenize into individual terms using NLTKs word_tokenize.
7. Define feature_list as list of features of the product, containing the following terms:
    a. "echo", "alexa", "music", "sound", "button","bluetooth", "voice", "battery", "dot", "phone"
8. Identify which of the features are being talked about in the audio review.
9. Record with the mic using the microphone method.
    a. Instantiate recognizer class from the utility.
    b. With the mic as source, 'listen' to the mic. You can say anything you like using your own microphone. Use recognize_google to convert to text.
    c. Record a sample review into the microphone, create a function to identify the product features being discussed in the audio.