DSA Assignment 4

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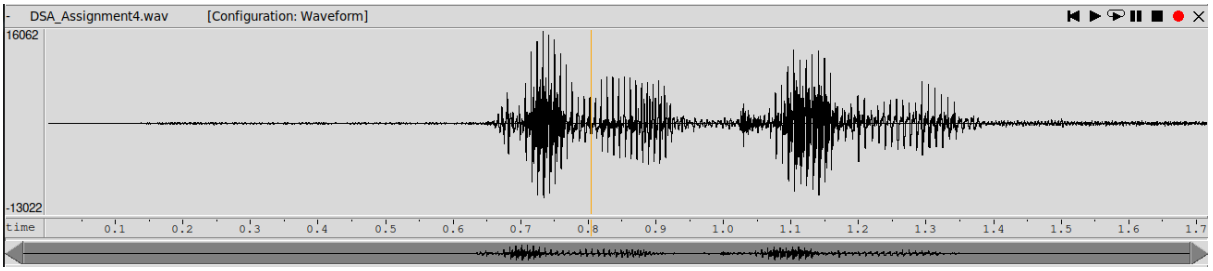
First, I recorded an audio with my name and then I converted that into .wav format using converters. The generated ".wav file" is used in wave surfer for generating plots for waveform, spectrogram, formants and phone boundaries.

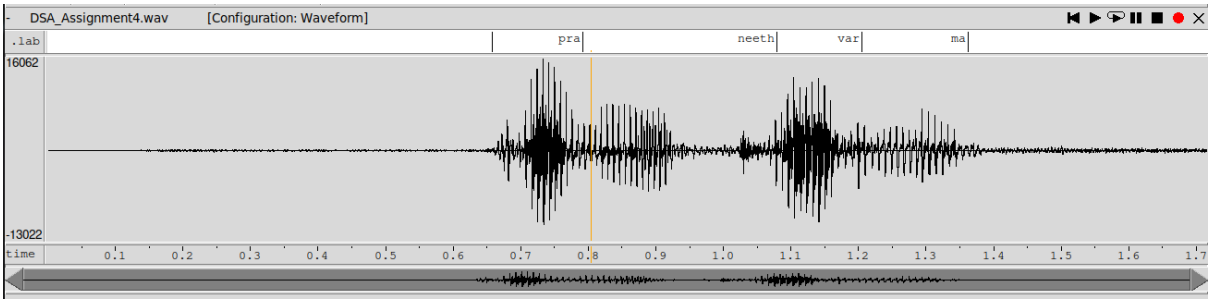
Coarticulation:
- This refers to the change in speech articulation of the current speech segment due to neighbouring speech or noise.
- This phenomenon arises in speech articulation because the movements of articulators are affected by the neighbouring phoneme.
- Example: If the word 'tulip' is to be pronounced, then the entire word pronunciation planning completely depends on the next character. If "tulip" were produced in a piecemeal fashion, with each sound planned only after the preceding sound was produced, the rounding of the lips required for "u" would only occur after "t" was uttered.
- From the above example, we understand that articulation of the current speech is being affected because of the preceding sound. So, this stands for a good example for coarticulation.

Waveform:
- Below is the waveform for the audio signal I generated with my name read in it.



- Waveform is basically a graphical representation of the shape and form of signal.
- In the case of sound signal, it describes the depiction of the pattern of sound pressure variation (or amplitude) in the time domain.

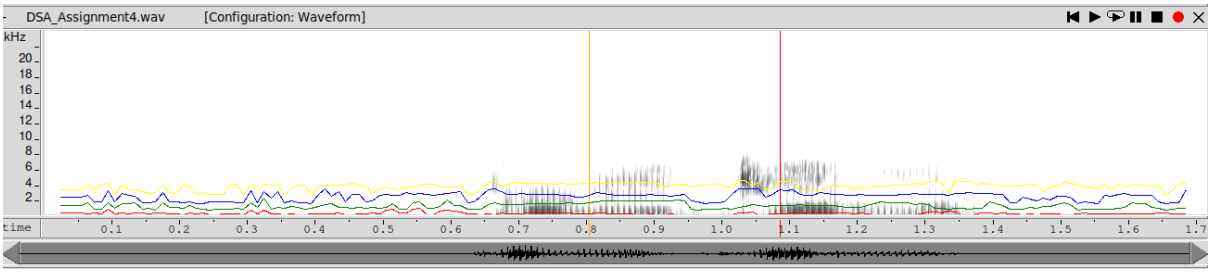
Waveform along with audio boundaries:
- Below is the waveform along with the audio boundaries.



▪ From the above waveform, we could clearly see the audio boundaries saying

0.6578645 0.7918993 **pra**
0.7918993 1.0791166 **neeth**
1.0791166 1.2049452 **var**
1.2049452 1.3622308 **ma**

Formant:
▪ The spectral peaks of the spectrum are referred to as formant.
▪ The peaks which are determined within the spectrum envelope are termed to be formant.
▪ Formants are basically frequency peaks with a high degree of energy. They are especially prominent in vowels.
▪ Below is the formant plot generated using the wave surfer for the .wav file with an audio.



Spectrogram:
▪ Spectrogram basically represents the signal strength or loudness of a signal over a time at various frequencies present in a waveform.
▪ In simple words, Spectrogram is a picture of sound.
▪ Below is the spectrogram of my audio file.