Digital Signal Analysis (CS7.303)

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Assignment 4

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Observations

The name "Abhinav" was recorded and analysed using WaveSurfer. The waveform, spectrogram and formant plots were generated. All these panes can be seen in Figure 1.

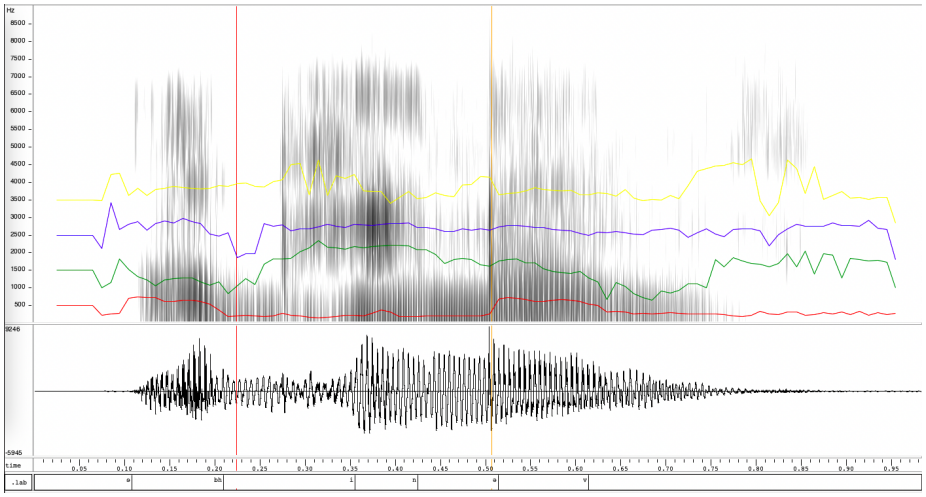

Figure 1: WaveSurfer Output

My observations on the above plots are:

- The vowels have significantly higher amplitude than the consonants. More specifically, we can rank the sounds in the name (schwa, /bh/, /i/, /n/, /v/) in order of the "loudness" as schwa ~ /i/ > /n/ > /bh/ ~ /v/. This makes sense as the loudest are the vowels (no constriction), followed by a nasal (constriction but open mouth), and lastly the stops and fricatives (closed mouth).

- The formants match approximately with expected F2 values of vowels. We can observe formants at 3.5kHz (/i/) and 1.5kHz (schwa). The F1 value of the latter, 500Hz, is also visible. However, the other formant, 2.5kHz (/e/) is not observed in the word.
- It is difficult to separate the consonants from the following vowels, *e.g.*, /bhi/ and /na/ are hard to break up. This could be because of the coarticulation process.