MFA Alignment Report

By: Akshay Pratap Singh **Date:** 7/11/2025 **Files:** `f2bjrlp` audio dataset

Github link - [axshay007/IIITH_assignment]

1. Model and Dictionary Used

- **Acoustic Model:** `english_us_arpa` (Downloaded via MFA)
- **Pronunciation Dictionary:** `english_us_arpa` (Downloaded via MFA)

2. Alignment Process

The alignment was run using the Montreal Forced Aligner (MFA) inside a Google Colab notebook (due to system constraint I used Google Colab). The script automatically prepared the audio and text files and ran the alignment.

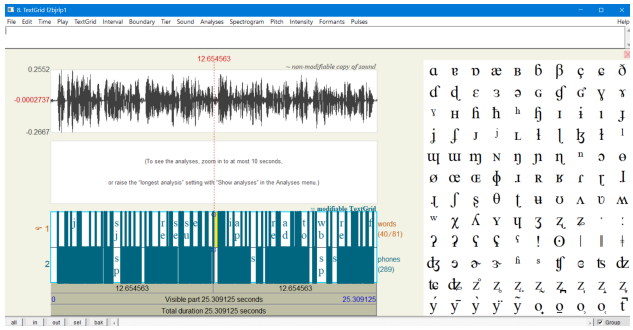
3. Key Observations

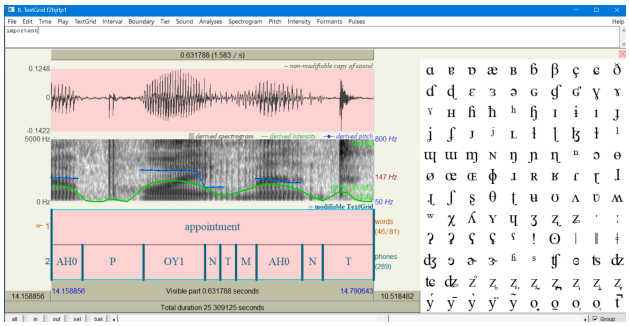
After checking the alignment in Praat (using my 9 sample screenshots), I found a few key patterns:

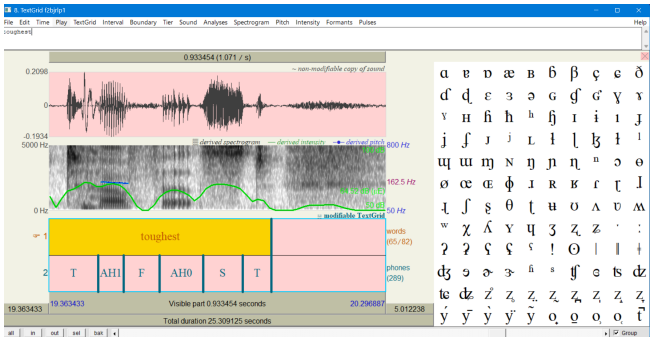
- **Good Alignments:** When the speaker was clear, the alignment was very accurate. The boundaries for words like "appointment" (`Boundary alignment.jpg`) and "fulfilled" (`Boundaries alignment2.jpg`) matched the sound wave well.
- **Handling Fast Speech:** The aligner was pretty smart. In `Fast speech analysis (skipping some syllable).jpg` , it correctly skipped a syllable in "administrative" to match the speaker's fast "ad-m'nistrative" pronunciation.
- **Minor Errors:** The errors were small and understandable.
  - **Timing:** For "toughest" (`Timing offset1.jpg`), the aligner started the "T" sound a little late, missing the silent part just before the puff of air.
  - **Dictionary vs. Speaker:** For "seventy" (`Fast speech analysis (different sounding).jpg`), the aligner put in a "T" sound because the dictionary said so, even though the speaker seems to have skipped it and said "sevedy."
- **Handling Noise:** The aligner was good at telling words from non-words. It correctly put a blank space for a pause (`Silence analysis.jpg`) and used an `<unk>` (unknown) tag for a random noise instead of trying to make it a word (`Silence analysis2.jpg`).

4. Sample Alignment Visualization

Here is a sample visualization from Praat, showing the two-tier system (words on top, phones on bottom).







5. All Visualizations

All 9 Praat sample alignment visualization screenshots are available at the link below:

[IIITH_assignment/MFA_sample_alignment_visualization at main · axshay007/IIITH_assignment]