LATEX submissions are mandatory. Submitting your assignment in another format will be graded no higher than R. Convenient table for the TIPA package used to processing IPA symbols can be found here. Detailed TIPA manual can be found here.

Contents

1 Lab Book A3.

In the Lab Book A3 we are focusing on spectral features of our speech signals. To examine these we are going to use Praat.

1.1 Submission

For this submission you will need to commit LaTeX file as usual and together with your commit link upload the following 2 files to the Brighspace assignment: one multi-channel .wav file and the corresponding .TextGrid file you made in the Assignment 1 (see below).

1.2 Assignment 1

[pts] *[10pts]*: *English*:

Preparation:

Take one of the recording of English version of "North Wind and the Sun" reading from the folder. Splice out ("segment")[a] the first sentence of the "North Wind and the Sun" - *"The North Wind and the Sun were disputing which was the stronger, when a traveler came along wrapped in a warm cloak."* - and annotate it in into words.

Next, filter the sound object of your first sentence with a low pass filter at 10 kHz. You will be working with this sound in this task.

Task:

- Split the prepared sound object into 8 equal channels using Hann filter and name the resulted sound objects accordingly (e.g, starting from the lowest frequency band - from 0 Hz to 1250 Hz will be named "ch1", from 1250 Hz to 2500 Hz - "ch2", etc.).

- Listen to each channel and examine spectrograms and waveforms of each channel individually[b].

- Examine each channel by opening ("View & Edit") it with the corresponding TextGrid file. In your answer name the sounds and the corresponding words that are visible and/or audibly recognizable in the channels 1, 2, 3, 4, 6, 8 (separate list for every channel), and reflect on what you see and hear: share your insights about different types of sounds that you see/hear on each channel.

- Combine all 8 channels into a multi-channel recording (select all channels and use "Combine" => "to stereo") and examine the resulted sound again. Rename the sound as "yourfirstname-wind-s1-selectedaccent.wav" (replace "yourfirstname" with your first name and "selectedaccent" with accent you selected from a folder: e.g., "vass-wind-s1-nz.wav") and save it. Also save the extracted TextGrid to accompany it (good practice is to name TextGrid the same as the original sound file, e.g. "vass-wind-s1-nz.TextGrid" .

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[a]Extract both the selected sound and TextGrid by using "time from 0" in the menu.

[b]If your spectrogram only shows frequencies up to 5kHz (the default value), adjust the spectrogram settings in the menu "Spectrum" => "Settings"

Answer

In the channel 1: **Most vowels are audibly recognizable while some plosives and fricatives with higher fundamental frequency are not.**

- close front unrounded vowel: disputing

- close back rounded vowel: disputing

- near-close near-front unrounded vowel: wind, disputing, came, which

- near-close near-back rounded vowel: cloak

- close-mid front unrounded vowel: when, came

- close-mid back rounded vowel: stronger, along

- mid central vowel: were, was, along, cloak, stronger, traveller

- open-mid back unrounded vowel: sun

- near-open front unrounded vowel: traveller

- open front unrounded vowel: wrapped

- open mid-back rounded vowel: north, warm

- voiced bilabial nasal: came, warm

- voiced labiodental fricative: traveller

- voiced dental nasal consonant: north, wind, sun, when

- voiced dental plosive: wind

- voiced dental approximant: stronger, traveller, wrapped

- voiced dental lateral approximant: traveller, along

- voiced labiodental approximant: wind, were, warm

- voiced palatal approximant: disputing

- voiced velar nasal: disputing, stronger, along

- voiced velar plosive: stronger

- voiceless bilabial plosive: wrapped

- voiceless dental plosive: stronger, traveller

- voiceless velar plosive: cloak

In the channel 2: **Some fricatives audibly unrecognizable in ch1 are recognizable in ch2; the speech is much more audibly recognizable than ch1 even though the loundness is lower.**

- close front unrounded vowel: disputing

- close back rounded vowel: disputing

- near-close near-front unrounded vowel: wind, disputing, came, which

- near-close near-back rounded vowel: cloak

- close-mid front unrounded vowel: when, came

- close-mid back rounded vowel: stronger, along

- mid central vowel: the, were, was, along, cloak, stronger, traveller

- open-mid back unrounded vowel: sun

- near-open front unrounded vowel: traveller

- open front unrounded vowel: wrapped

- open mid-back rounded vowel: north

- voiced bilabial plosive: disputing

- voiced bilabial nasal: came

- voiced labiodental fricative: traveller

- voiced labiodental approximant: wind, were, which, when

- voiced dental nasal consonant: north, wind, sun, when

- voiced dental plosive: wind

- voiced dental approximant: stronger, traveller, wrapped

- voiced dental lateral approximant: traveller, along

- voiced palatal approximant: disputing

- voiced velar nasal: disputing, stronger, along

- voiced velar plosive: stronger

- voiceless dental plosive: stronger, traveller, wrapped

- voiceless dental fricative: the, north

- voiceless alveolar fricative: sun, disputing, was, stronger

- voiceless velar plosive: cloak

- voiceless affricate: which

In the channel 3: **Vowels are becoming less audibly recognizable while some fricatives and plosives are becoming clearly recognizable**

- close front unrounded vowel: disputing

- close back rounded vowel: disputing

- close-mid front unrounded vowel: when, came

- close-mid back rounded vowel: stronger, along

- near-close near-front unrounded vowel: wind, disputing, came, which

- mid central vowel: the, was, along, stronger, were

- near-open front unrounded vowel: wrapped

- open mid-back rounded vowel: north

- voiced bilabial plosive: disputing

- voiced bilabial nasal: came

- voiced labiodental fricative: traveller

- voiced labiodental approximant: wind, which

- voiced dental nasal consonant: north, wind, sun, when

- voiced dental plosive: wind,

- voiced dental approximant: stronger, traveller, wrapped

- voiced dental lateral approximant: traveller, along

- voiced palatal approximant: disputing

- voiced velar nasal: disputing, stronger, along

- voiced velar plosive: stronger

- voiceless dental fricative: north

- voiceless dental plosive: stronger, traveller, wrapped

- voiceless alveolar fricative: sun, disputing, was, stronger

- voiceless velar plosive: cloak

- voiceless affricate: which

In the channel 4: **Vowels are not audibly recognizable while some plosives and fricatives still are**

- voiceless dental fricative consonant: north

- voiceless dental plosive: wind, disputing, wrapped

- voiceless dental plosive: stronger, traveller

- voiced dental approximant: stronger, traveller

- voiceless alveolar fricative: sun, disputing, stronger

- voiceless velar plosive: came, cloak

- voiceless affricate: which

In the channel 6: **Only some fricatives are audibly recognizable**

- voiced dental approximant: stronger, traveller

- voiceless dental plosive: stronger, traveller

- voiceless alveolar fricative: sun, disputing, stronger

- voiceless affricate: which

In the channel 8: **I would say that some sounds I can hear here is quite subjective**

- voiceless alveolar fricative: sun, disputing, stronger