Practicum I: Introduction to Continuous and Discrete Time Signals & Operations
Instructor/TA Sign Off Sheet, & Report Form

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For this Practicum, attach all plots requiring sign off below.

1. Procedure 1(b,c): Plots and sounds of the given audio signals .....
Comment on the questions.

Based on the signal graph it looks like consonant give out higher amplitude signals than vowels. In the spectrogram it looks like "i" and "o" sounds have higher frequencies. it also looks like while "e" sounds might have low frequencies, they have the highest amplitudes

2. Procedure 1(d): Plots and sounds of audio signals from self.....
Comment on the questions.

The patterns in the graphs are very similar. For the time series signal plot, the same vowels ~~were~~ had higher amplitudes than others, while the frequency plots also had similarties, there was more noise in those ~~ones~~ graphs.

3. Procedure 1(e): Comment on the questions.

The spectrogram belongs to the "university" category. the pattern of the frequencies is very similar. This can be useful in fields such as new AI personal assistants ~~where~~ Alexa and siri. They are able to reeognize such as words.

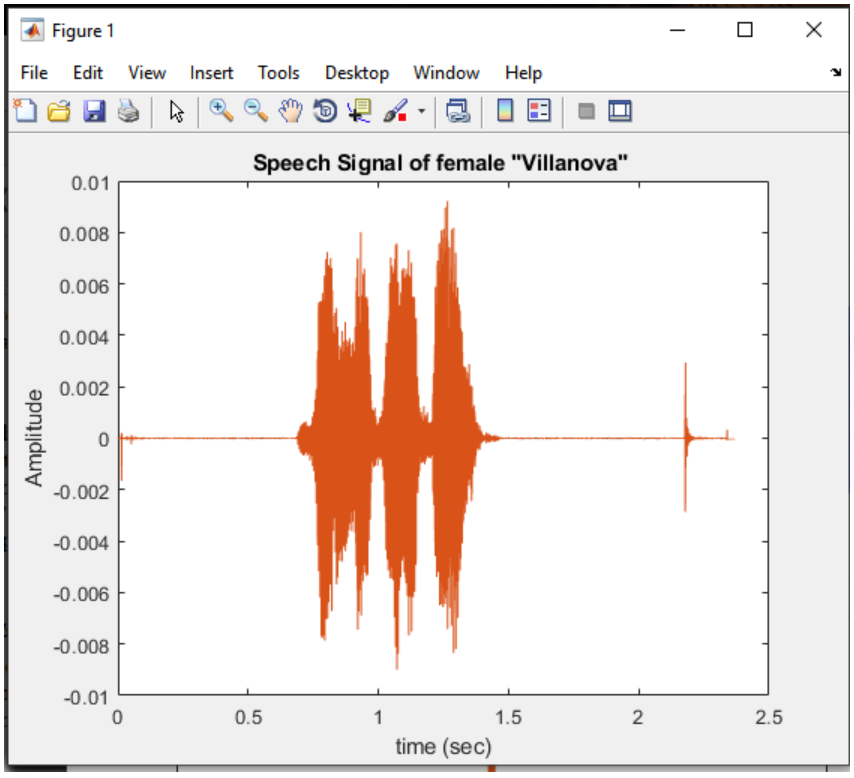
4. Procedure 2(a,b): Sounds of signals after given operations.....
Comment on the questions.

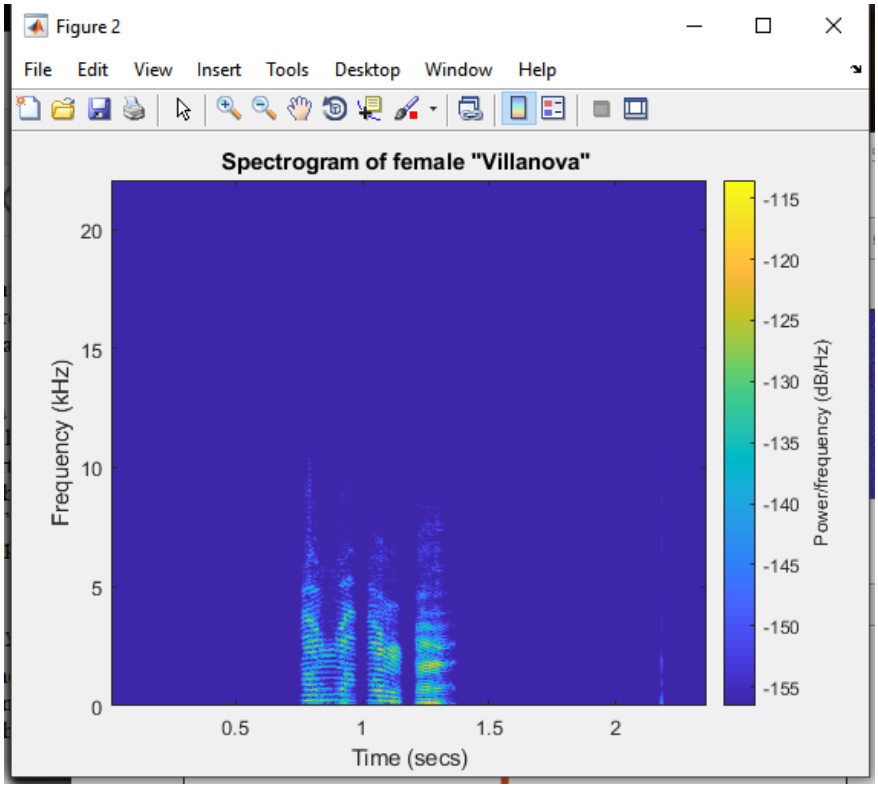
2Fs - compresses time.
Fs/2 - Stretches time
flipud(s) - time reversal.
(S/5) - amplitude scaling, makes the signal quieter.

5. Procedure 2(c,d): Plots of signals after given operations.....
Comment on the questions.

D. Different values will give you different amounts of noise. Noisy signals can happen with something as simple as background noise. Example during a zoom call, microphones can pick up sound from a fan/AC in the background. Some methods that engineers use to fix this is using filters. They can separate signals by sorting frequencies.

PART 1A and 1B





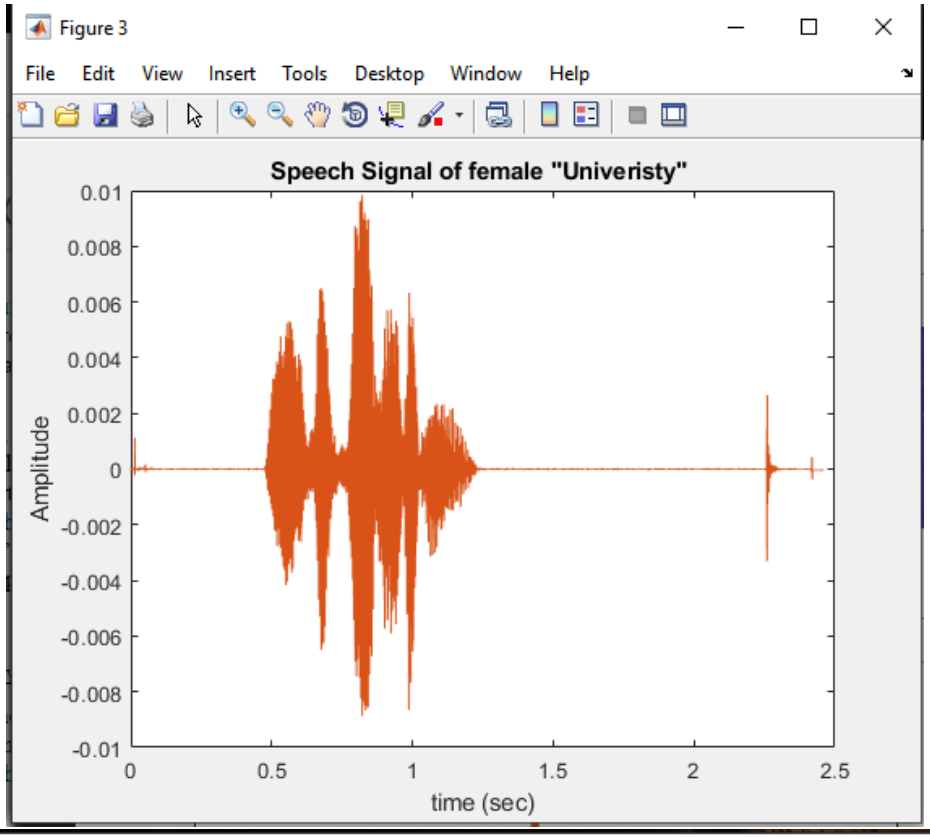


Figure 3
File Edit View Insert Tools Desktop Window Help
Speech Signal of female "Univeristy"
Amplitude
time (sec)
0.01
0.008
0.006
0.004
0.002
0
-0.002
-0.004
-0.006
-0.008
-0.01
0
0.5
1
1.5
2
2.5

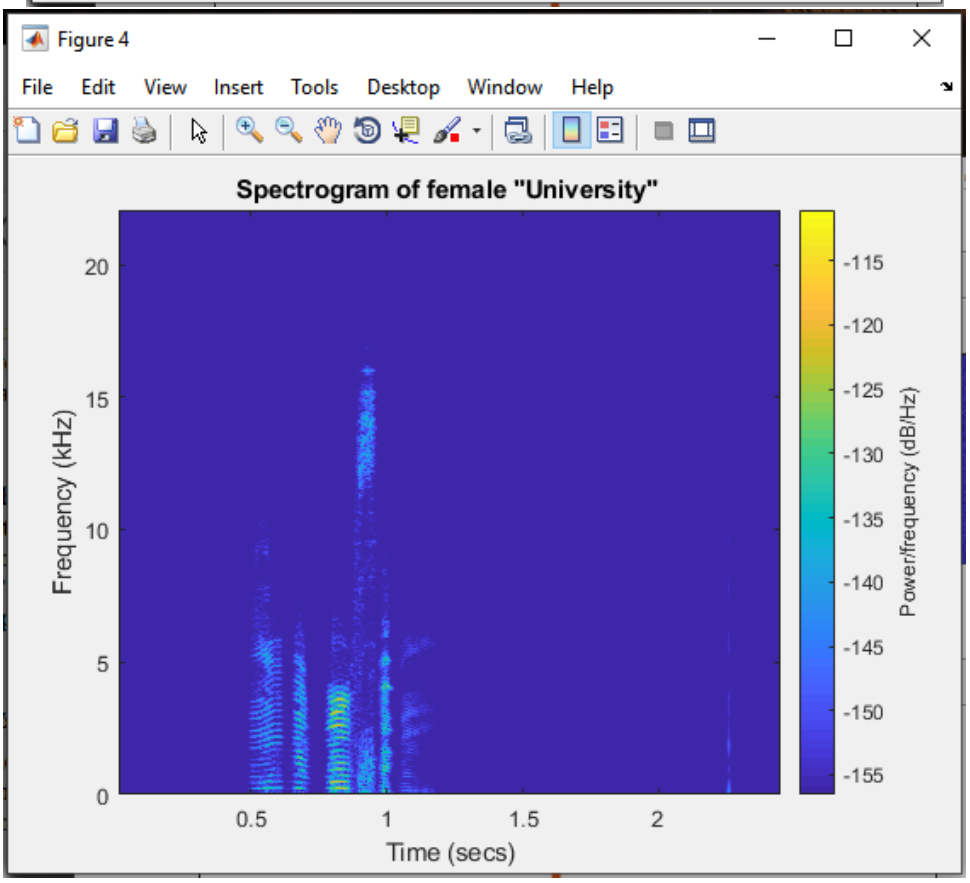


Figure 4
File Edit View Insert Tools Desktop Window Help
Spectrogram of female "University"
Frequency (kHz)
Time (secs)
Power/frequency (dB/Hz)
20
15
10
5
0
0.5
1
1.5
2
-115
-120
-125
-130
-135
-140
-145
-150
-155

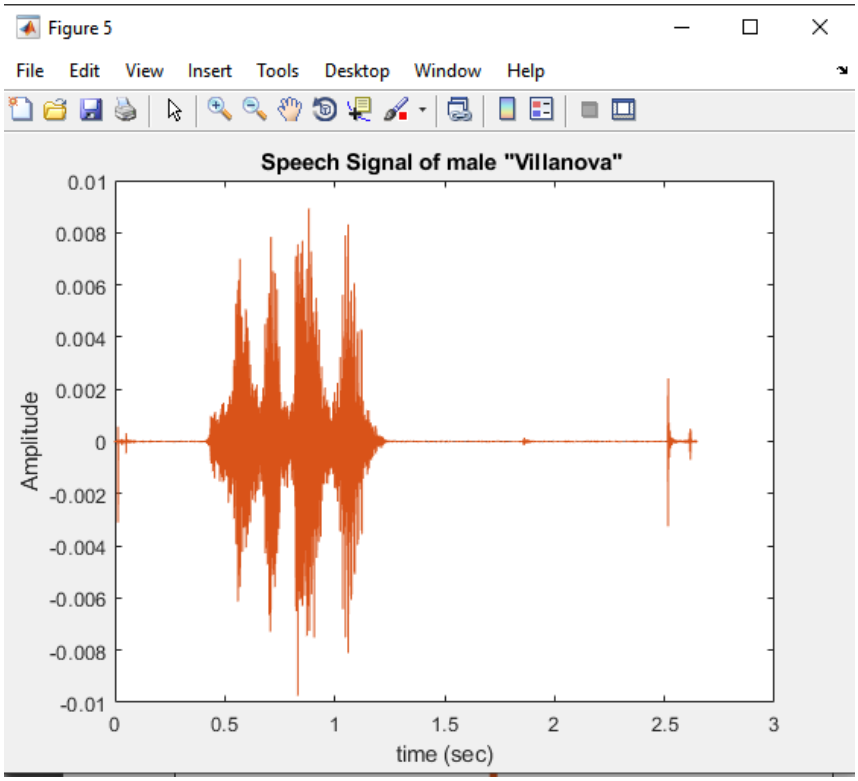


Figure 5
File Edit View Insert Tools Desktop Window Help
Speech Signal of male "Villanova"
Amplitude
time (sec)
0.01
0.008
0.006
0.004
0.002
0
-0.002
-0.004
-0.006
-0.008
-0.01
0 0.5 1 1.5 2 2.5 3

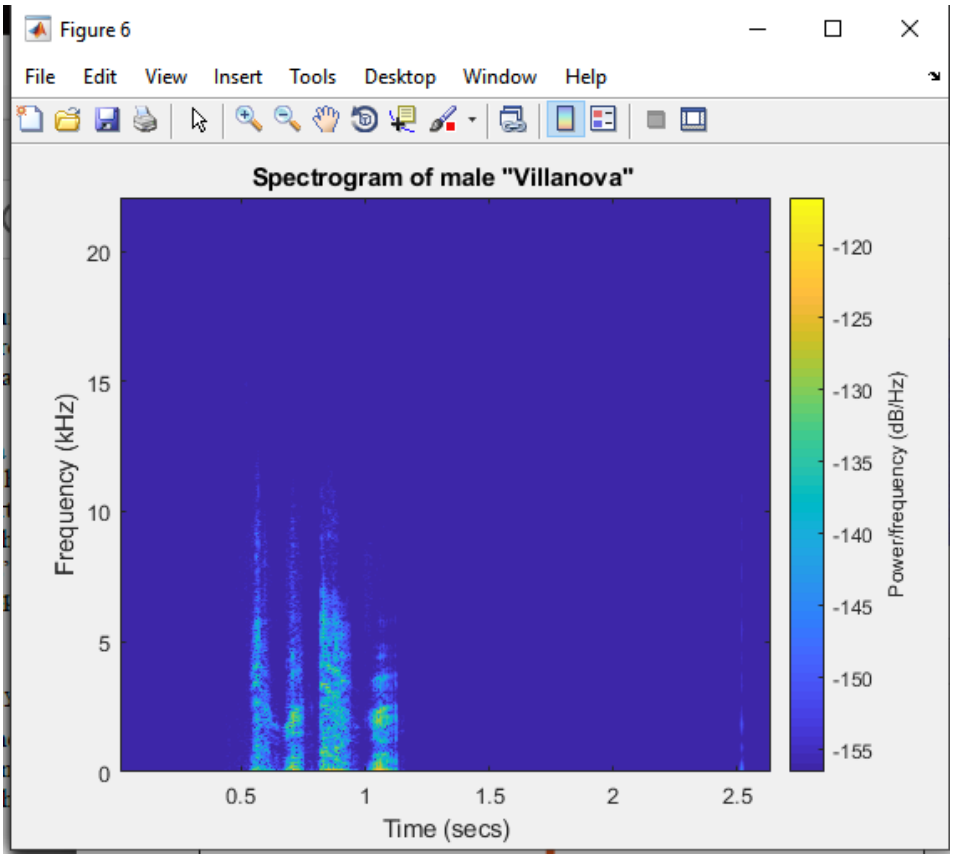


Figure 6
File Edit View Insert Tools Desktop Window Help
Spectrogram of male "Villanova"
Frequency (kHz)
Time (secs)
Power/frequency (dB/Hz)
20
15
10
5
0
0.5 1 1.5 2 2.5
-120
-125
-130
-135
-140
-145
-150
-155

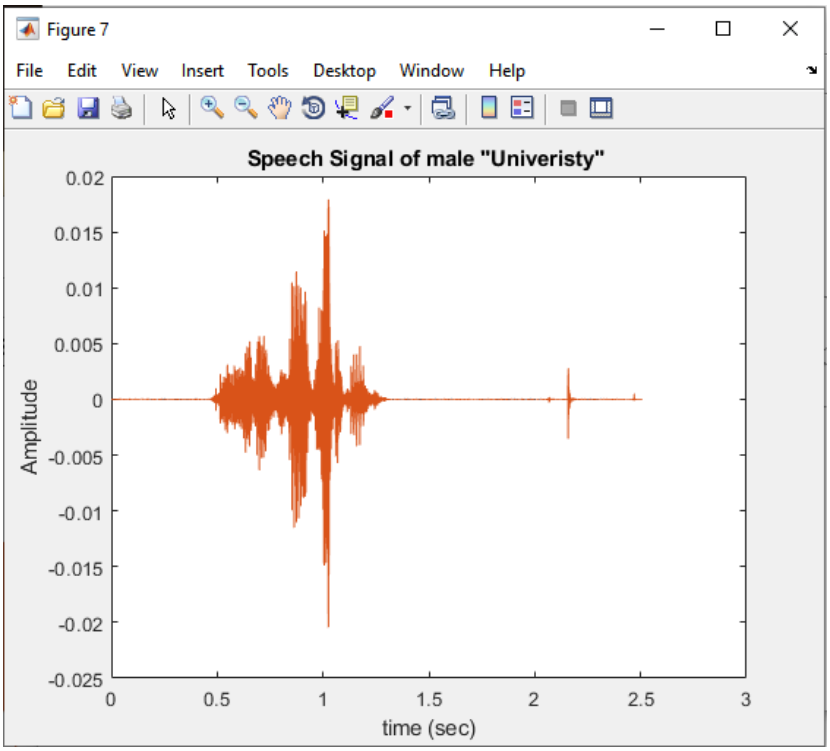


Figure 7
File Edit View Insert Tools Desktop Window Help
Speech Signal of male "Univeristy"
Amplitude
time (sec)
0.02
0.015
0.01
0.005
0
-0.005
-0.01
-0.015
-0.02
-0.025
0 0.5 1 1.5 2 2.5 3

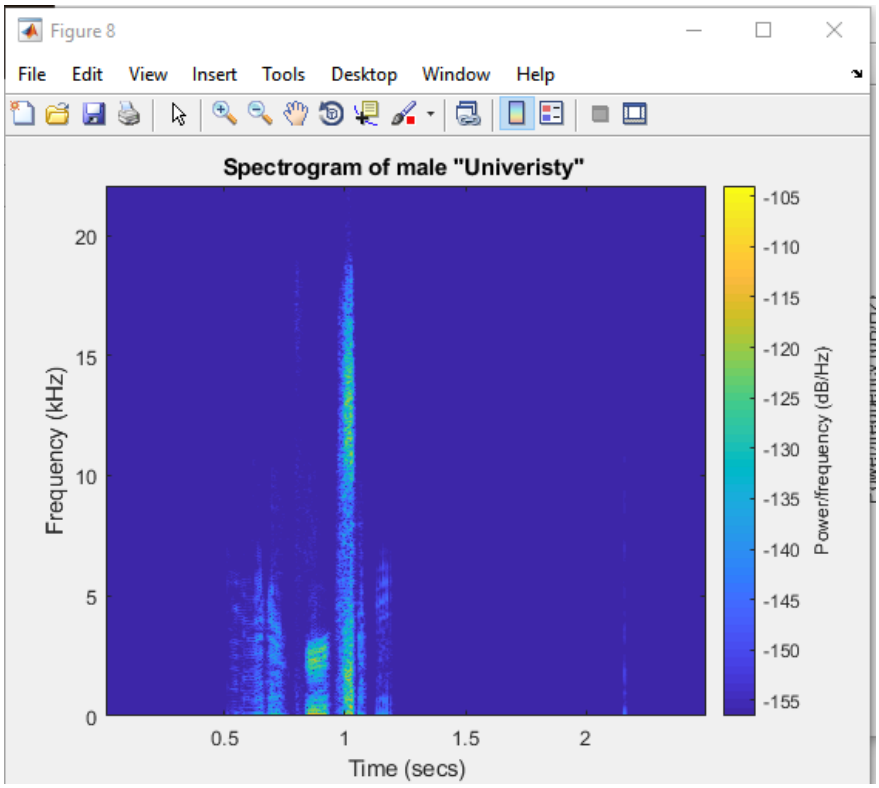
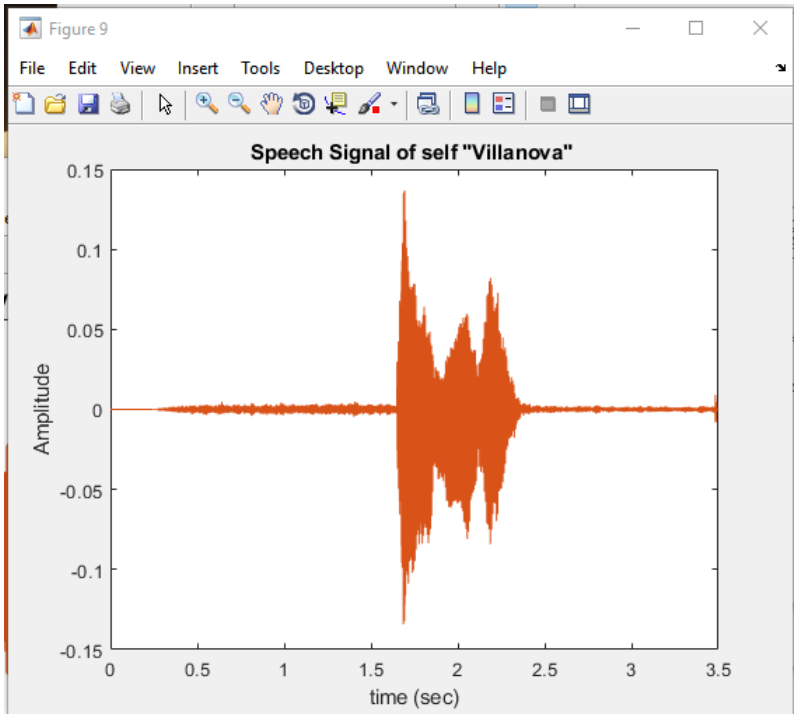
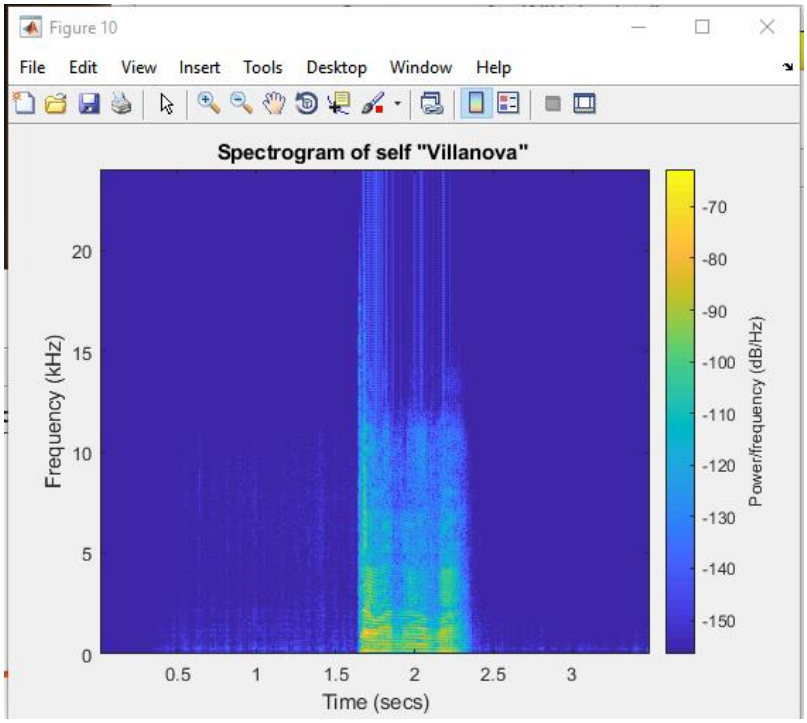


Figure 8
File Edit View Insert Tools Desktop Window Help
Spectrogram of male "Univeristy"
Frequency (kHz)
Time (secs)
Power/frequency (dB/Hz)
20
15
10
5
0
0.5 1 1.5 2
-105
-110
-115
-120
-125
-130
-135
-140
-145
-150
-155

PART 1C and 1D





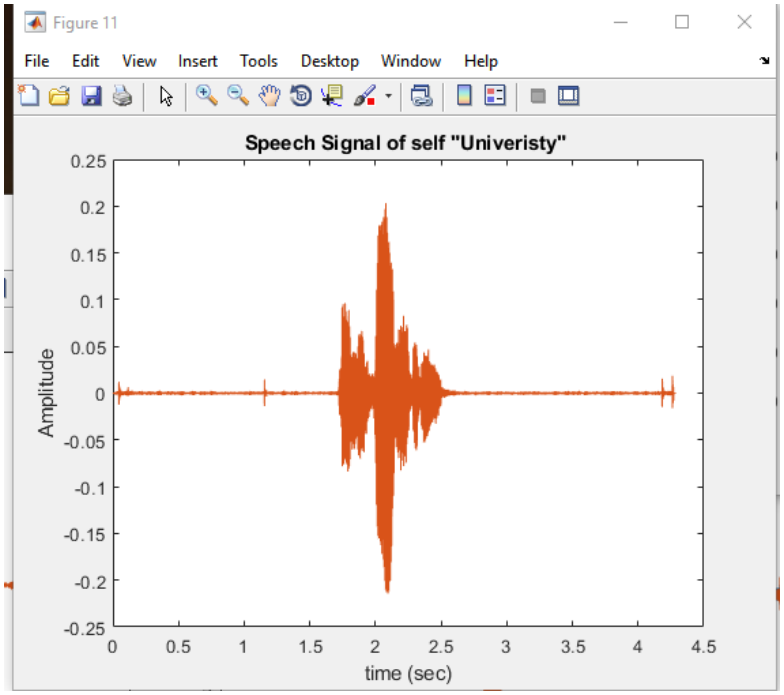


Figure 11
File Edit View Insert Tools Desktop Window Help
Speech Signal of self "Univeristy"
Amplitude
time (sec)
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5

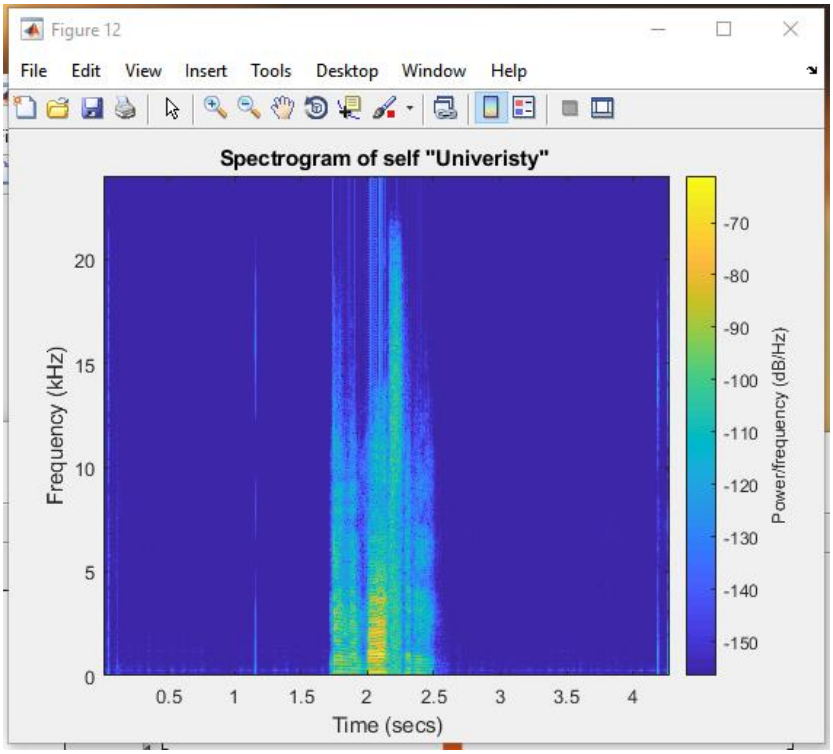
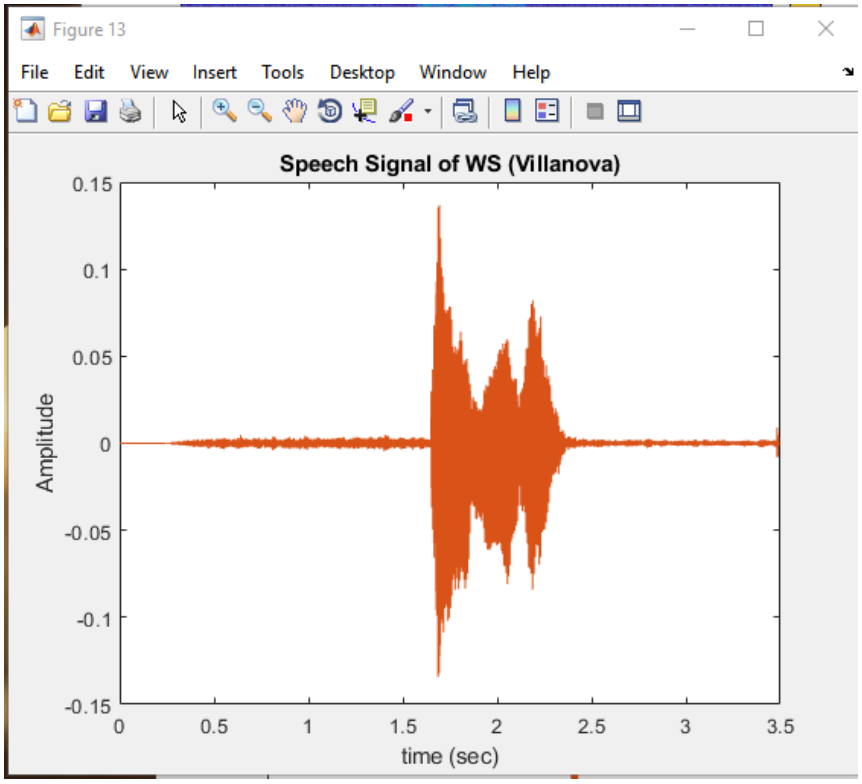
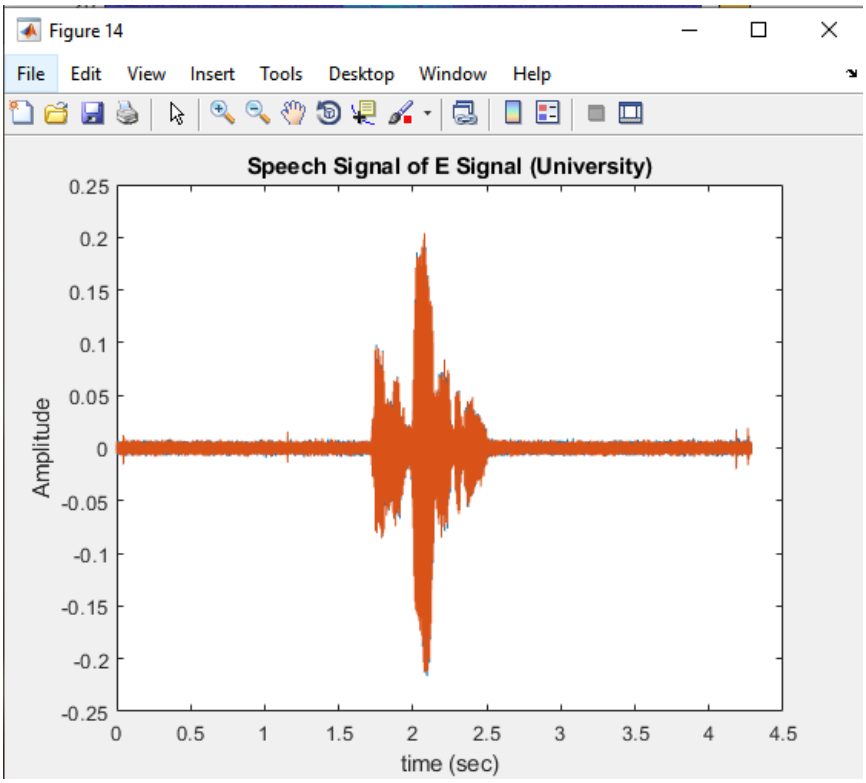


Figure 12
File Edit View Insert Tools Desktop Window Help
Spectrogram of self "Univeristy"
Frequency (kHz)
Time (secs)
Power/frequency (dB/Hz)
20
15
10
5
0
0.5 1 1.5 2 2.5 3 3.5 4
-70
-80
-90
-100
-110
-120
-130
-140
-150

PARTS 1C and 1D





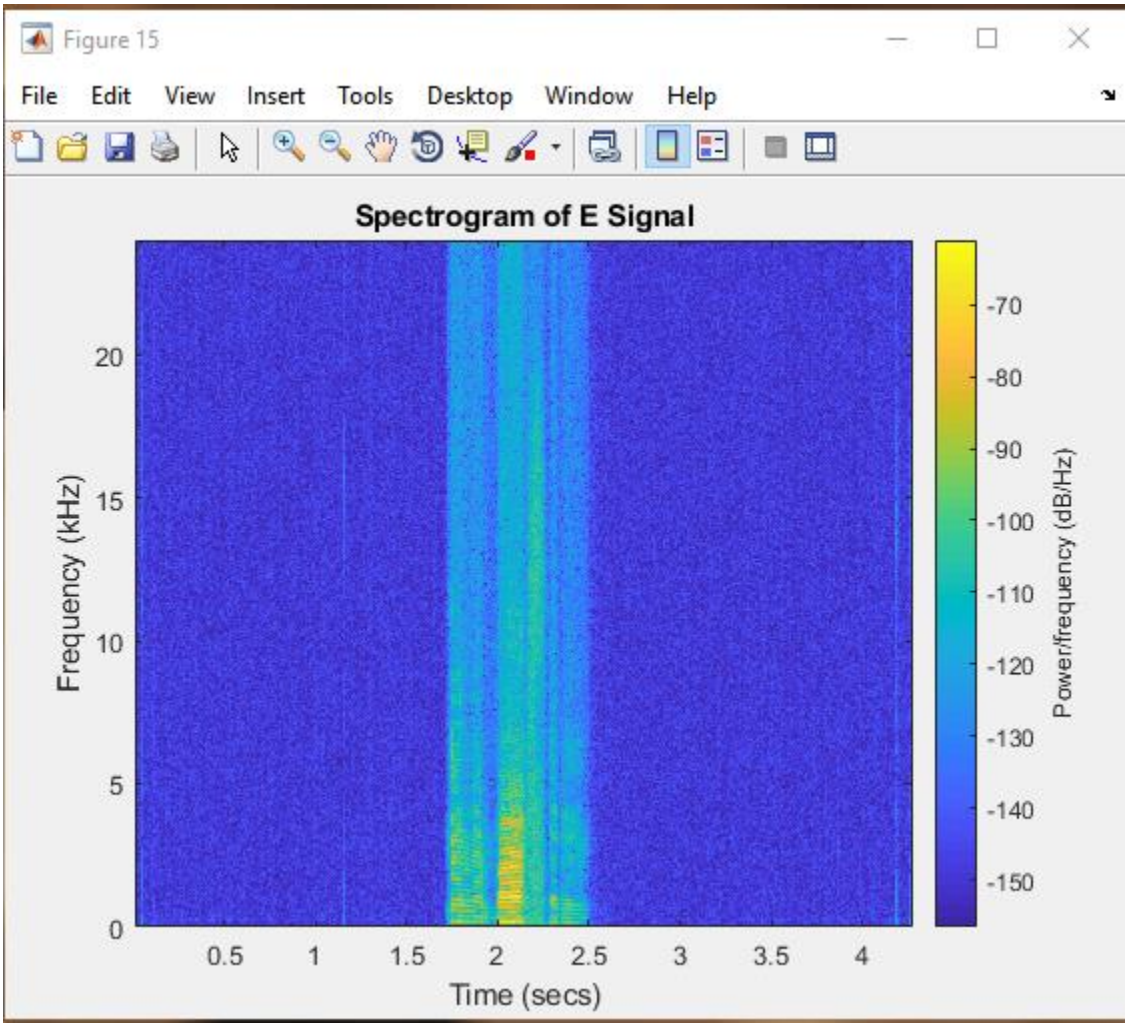


Figure 15
File Edit View Insert Tools Desktop Window Help
Spectrogram of E Signal
Frequency (kHz)
0
5
10
15
20
0.5
1
1.5
2
2.5
3
3.5
4
Time (secs)
-70
-80
-90
-100
-110
-120
-130
-140
-150
Power/frequency (dB/Hz)