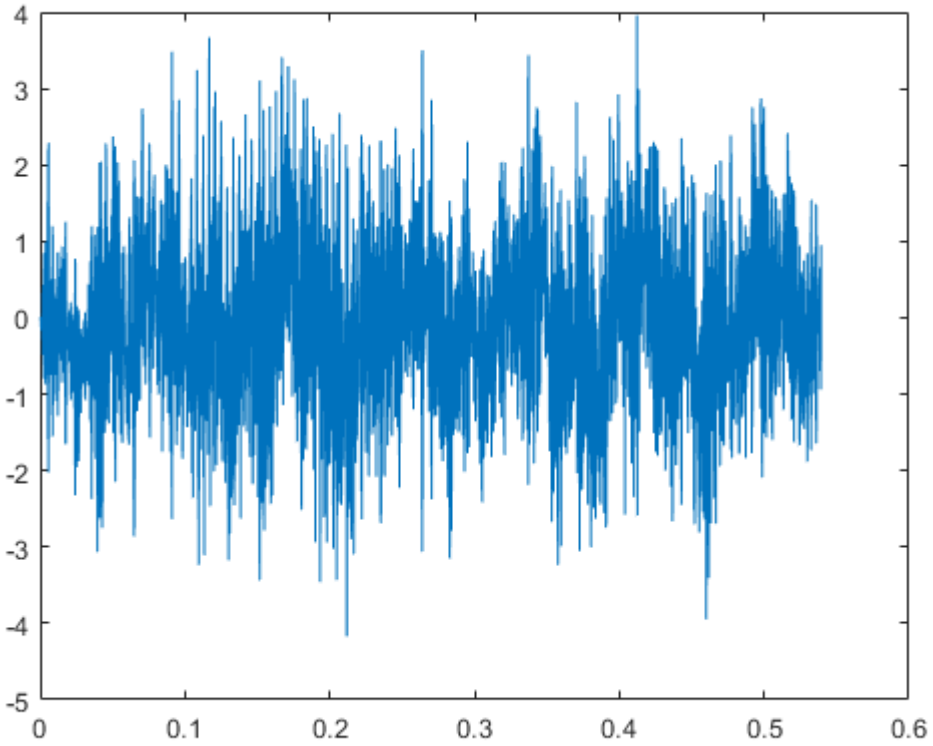
Contents

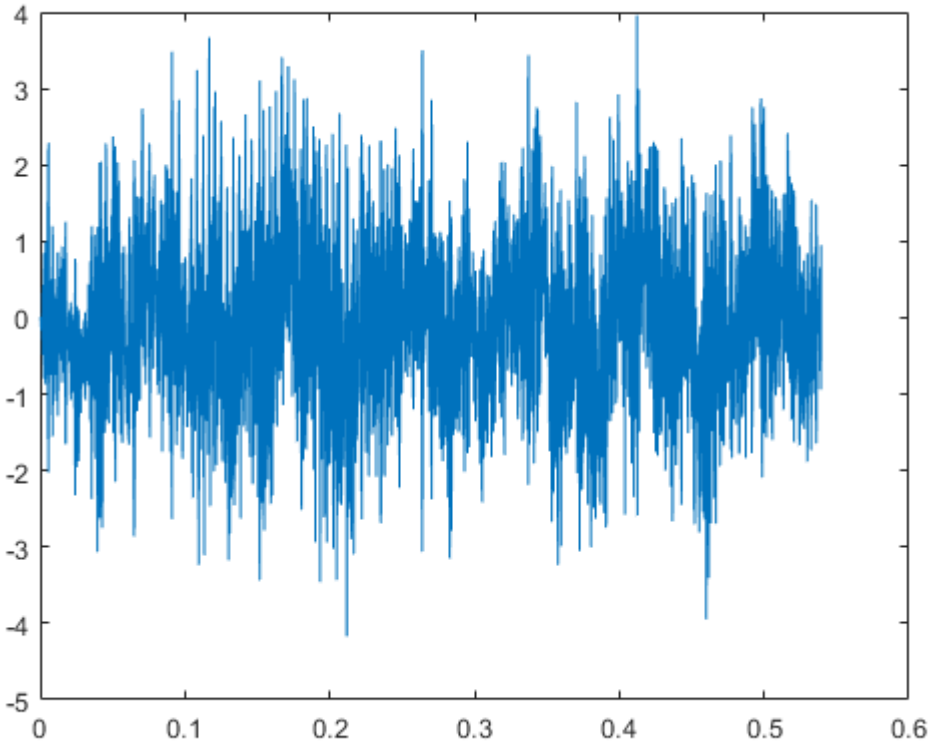
Part 1

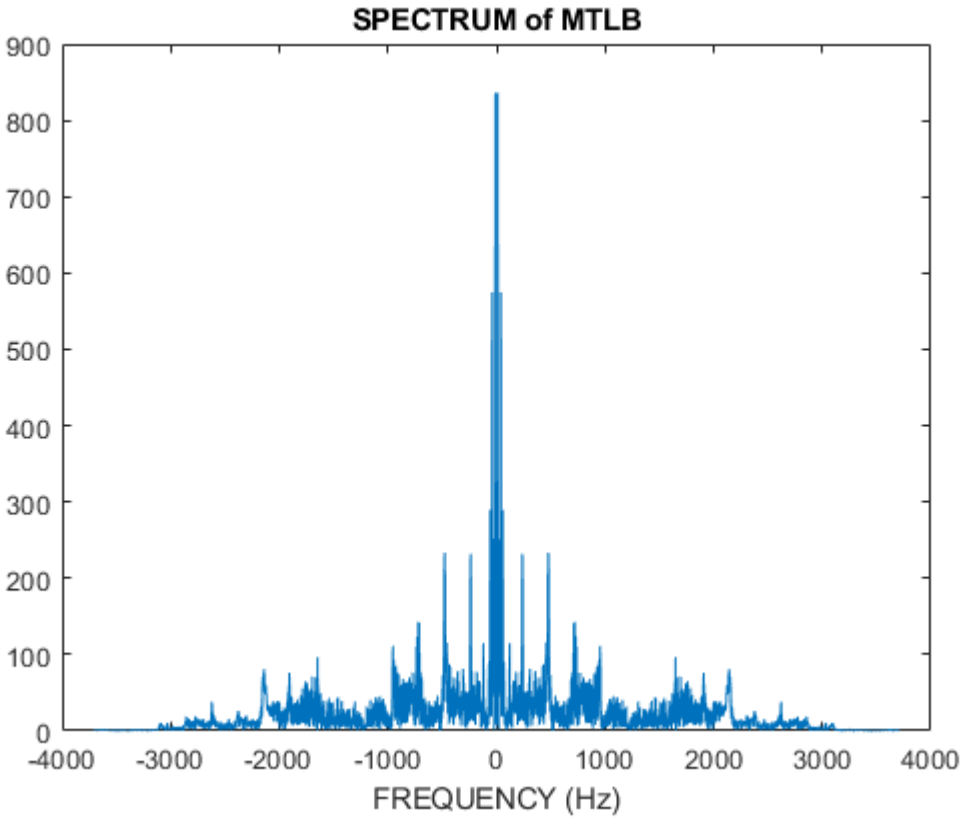
```
clear all;

close all;

load mtlb

soundsc(mtlb)

L=length(mtlb);

figure

plot([1:L]/Fs,mtlb);

axis tight

xlabel('Time (Seconds');



load NoisySpeech.txt;

x = NoisySpeech;

plot([1:L]/Fs,x);

soundsc(x);
```



Part 2

```
[M,f] = dtft(mtlb,1/Fs);  %Discrete-Time Fourier Transform function.

figure

plot(f,M)

xlabel('FREQUENCY (Hz)');

title('SPECTRUM of MTLB');
```



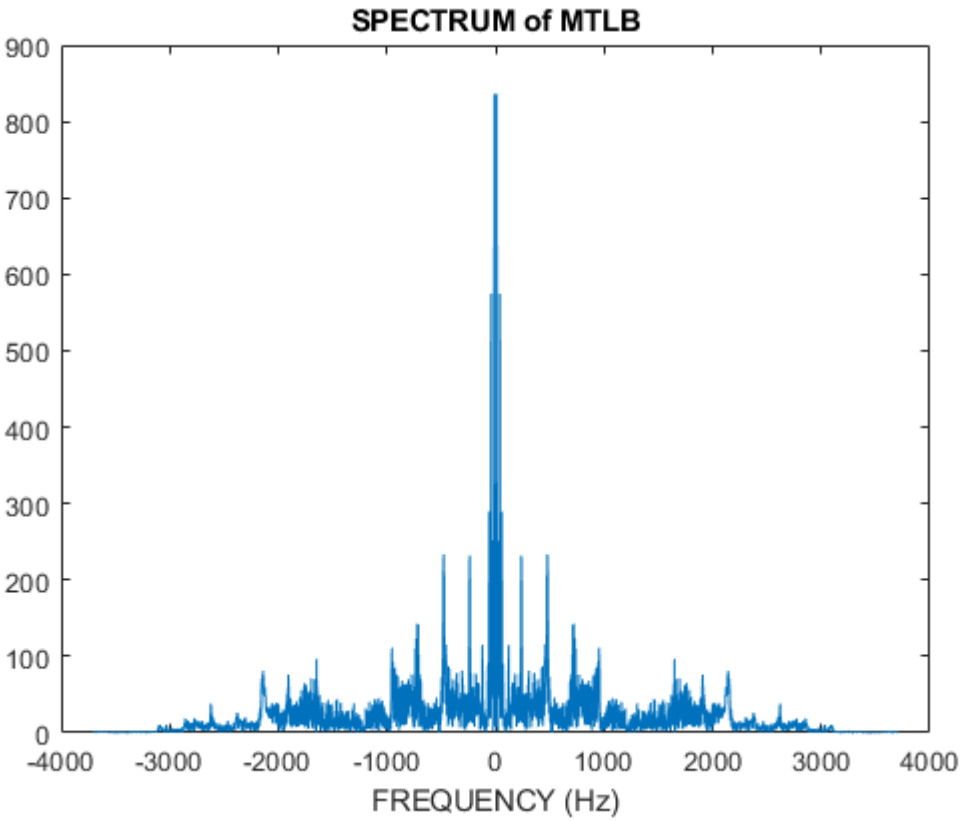


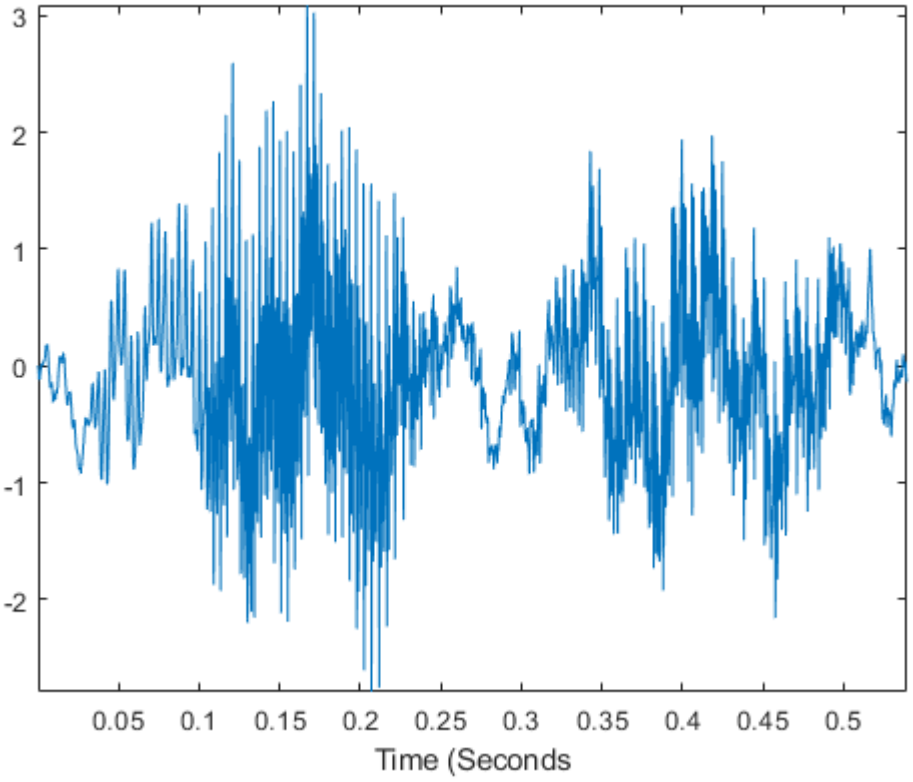
part 3

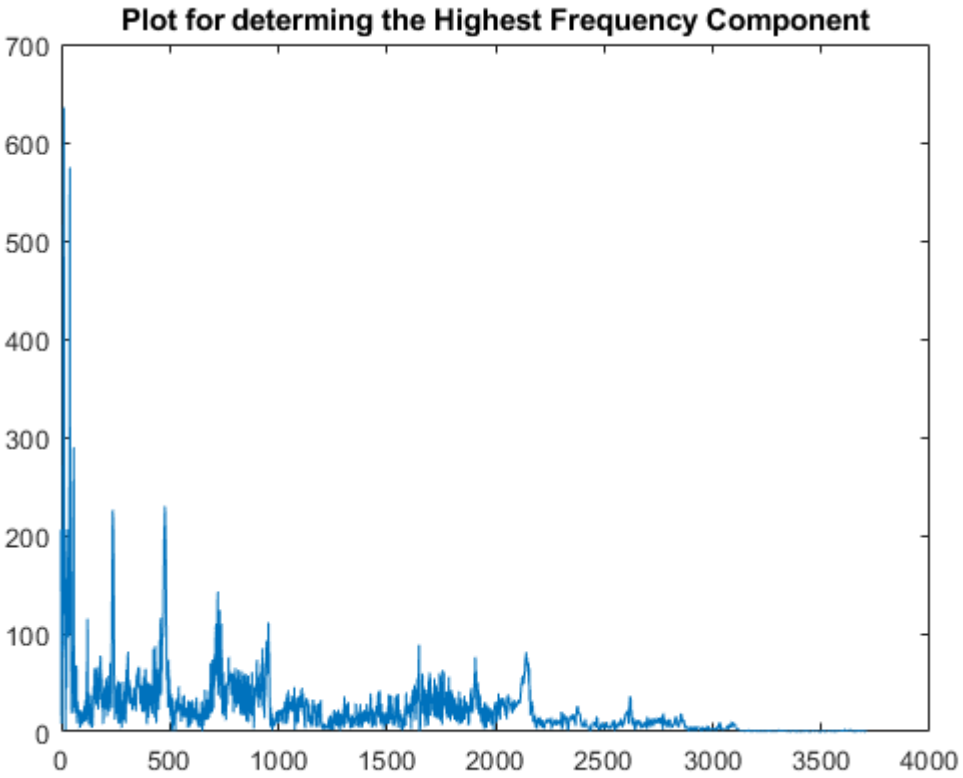
```
load mtlb
```

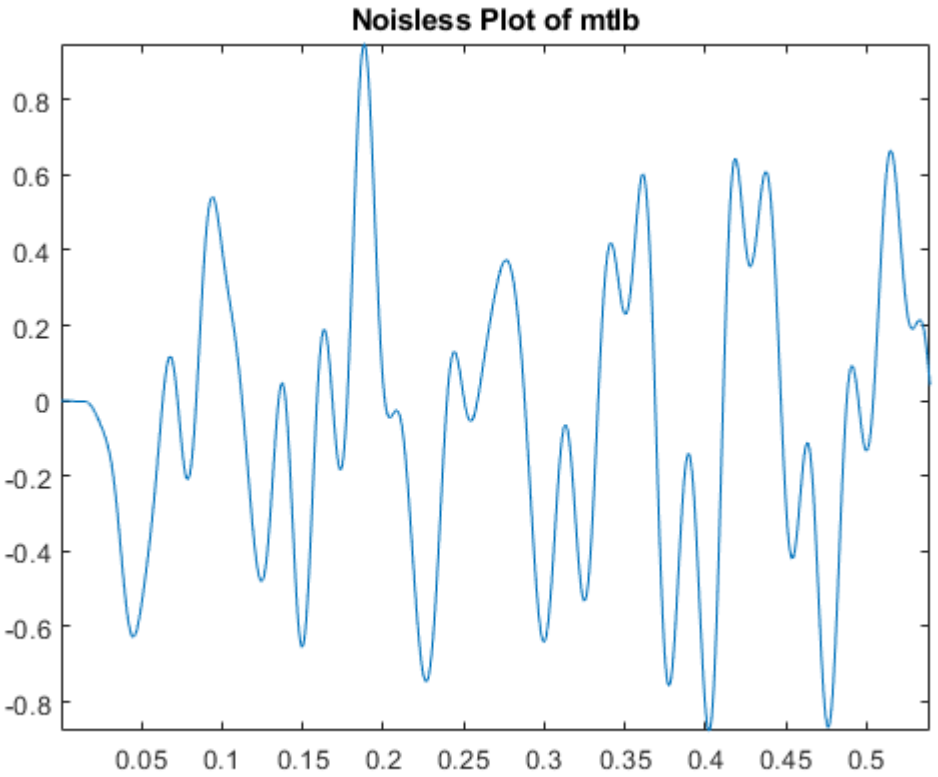
```
L=length(mtlb);

figure

plot([1:L]/Fs,mtlb);

axis tight

xlabel('Time (Seconds');



N=2^nextpow2(L);



yft=abs(fft(mtlb,N));



freq=Fs/2*linspace(0,1,N/2+1);

figure

plot(freq,yft(1:length(freq)));

title('Plot for determing the Highest Frequency Component');

n=6;

wn=[40]*2/Fs;

[b,a]=butter(n,wn,'low');

[h,w]=freqz(b,a,1024,Fs);

fo=filter(b,a,mtlb);

figure

plot([1:L]/Fs,fo)

axis tight
```

```
title('Noisless Plot of mtlb');
```









part 4

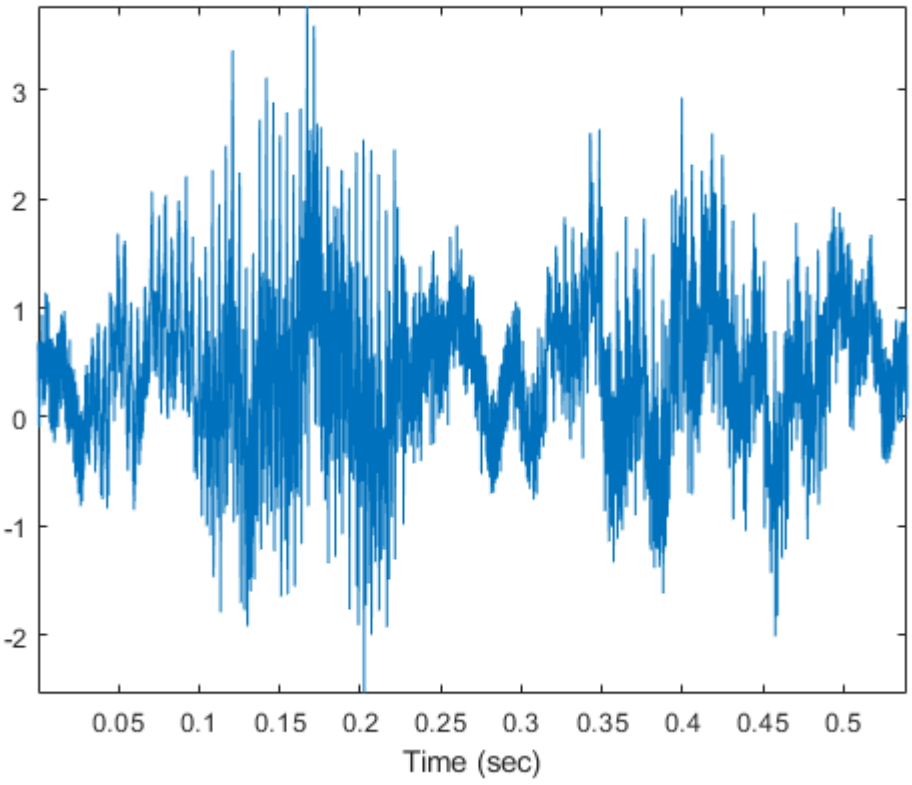
```
load mtlb
```

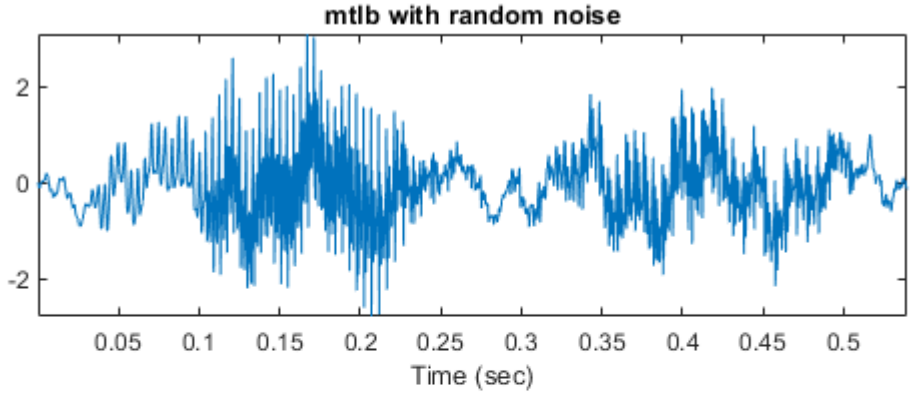
```
soundsc(mtlb)

who

T=1/Fs;

L=length(mtlb);

y=mtlb+rand(4001,1);% signal is added with random noise signal



plot([1:L]/Fs,y);

axis tight

xlabel('Time (sec)');



figure();

subplot(2,1,1);

plot([1:L]/Fs,mtlb);

axis tight

xlabel('Time (sec)');

title('mtlb with random noise');



[b,a] = ellip(6,0.01,7,0.2);

out=filter(b,a,y);

subplot(2,1,2);

plot([1:L]/Fs,out);

xlabel('Time (sec)');
```

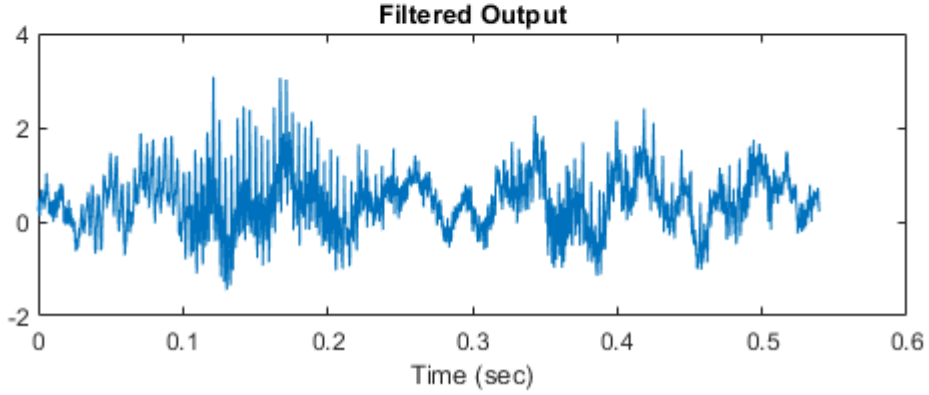
```
title('Filtered Output');
```

Your variables are:

Fs	N	b	freq	n	x
L	NoisySpeech	f	h	w	yft
M	a	fo	mtlb	wn	


3
2
1
0
-1
-2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Time (sec)


mtlb with random noise
2
0
-2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Time (sec)


Filtered Output
4
2
0
-2
0
0.1
0.2
0.3
0.4
0.5
0.6
Time (sec)

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