

# Audio Filter

EE23BTECH11204 - ASHLEY ANN BENOY\*

## I. DIGITAL FILTER

- I.1 The sound file used for this code is obtained from the below link

<https://github.com/Ashley-Ann-Benoy/EE1205>

- I.2 A Python Code is written to achieve Audio Filtering

```
import soundfile as sf
from scipy import signal

#read .wav file
input_signal,fs = sf.read('doha.wav')

#sampling frequency of Input signal
sampl_freq=fs

#order of the filter
order=4

#cutoff frquency 4kHz
cutoff_freq=4701.0

#digital frequency
Wn=2*cutoff_freq/sampl_freq

# b and a are numerator and denominator
  polynomials respectively
b, a = signal.butter(order,Wn, 'low')

#filter the input signal with butterworth filter
#output_signal = signal.filtfilt(b, a,
    input_signal)
output_signal = signal.lfilter(b, a,
    input_signal)

#write the output signal into .wav file
sf.write('Sound_With_ReducedNoise.wav',
    output_signal, fs)
```

The audio file is analyzed using spectrogram using the online platform

<https://academo.org/demos/spectrum-analyzer>.

The darker areas are those where the frequencies have very low intensities, and the orange and yellow areas represent frequencies that have high intensities in the sound.

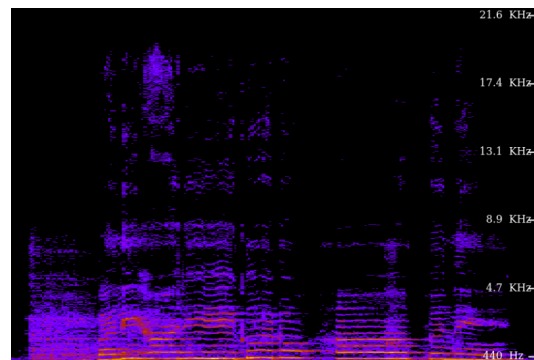


Fig. 1. Spectrogram of the audio file before Filtering



Fig. 2. Spectrogram of the audio file after Filtering