

### 3. Connecting and Testing the Microphone

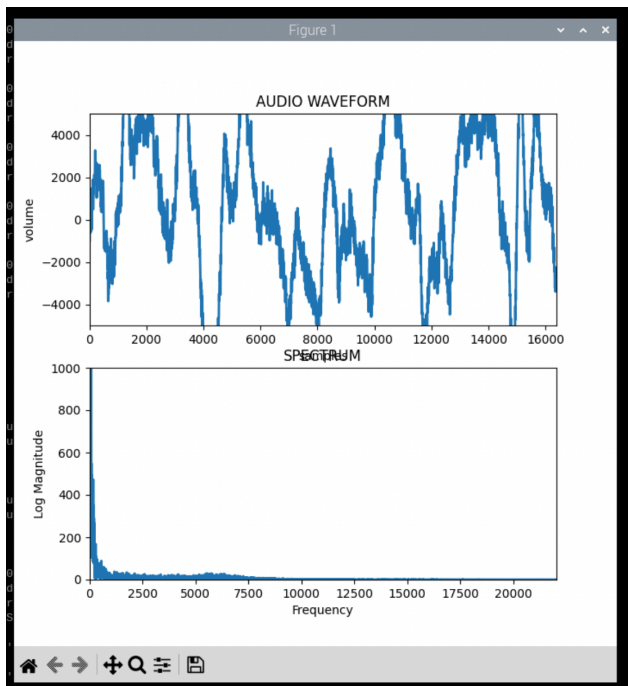
```
(audio) pi@pb096:~$ pwd
/home/pi
(audio) pi@pb096:~$ arecord --duration=10 test.wav
Warning: Some sources (like microphones) may produce inaudible results
with 8-bit sampling. Use '-f' argument to increase resolution
e.g. '-f S16_LE'.
Recording WAVE 'test.wav' : Unsigned 8 bit, Rate 8000 Hz, Mono
(audio) pi@pb096:~$ aplay test.wav
Playing WAVE 'test.wav' : Unsigned 8 bit, Rate 8000 Hz, Mono
(audio) pi@pb096:~$ AC
```

pi	Templates	19/11/24 21:45
lib	Videos	19/11/24 21:45
lost+found	image.jpg	290.9 KiB 14/01/25 16:56
media	output.mp4	807.8 KiB 14/01/25 17:04
mnt	test.wav	78.2 KiB 04/02/25 00:43

"test.wav" (78.2 KiB) WAV audio

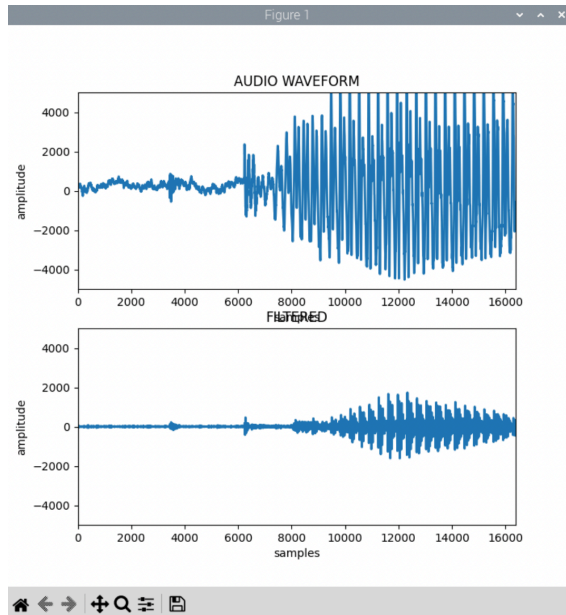
Free space: 7.7 GiB (Total: 14.1 GiB)

### 4. Introduction to Sound Processing with Python

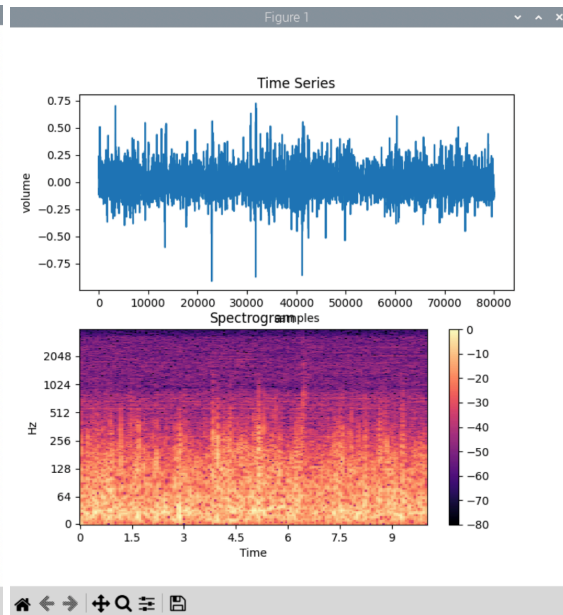


## 5. Basic Sound Analytics

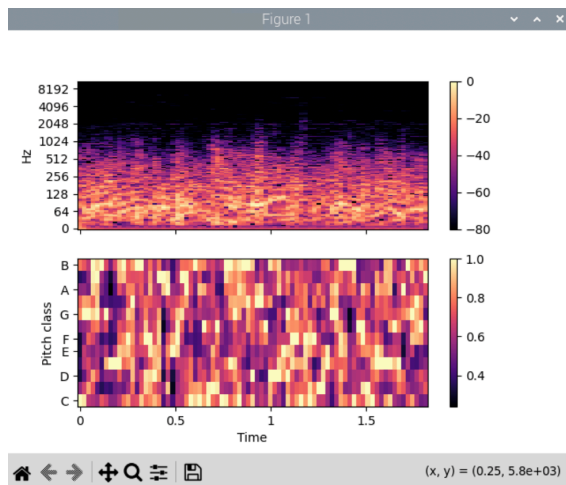
### Filtering



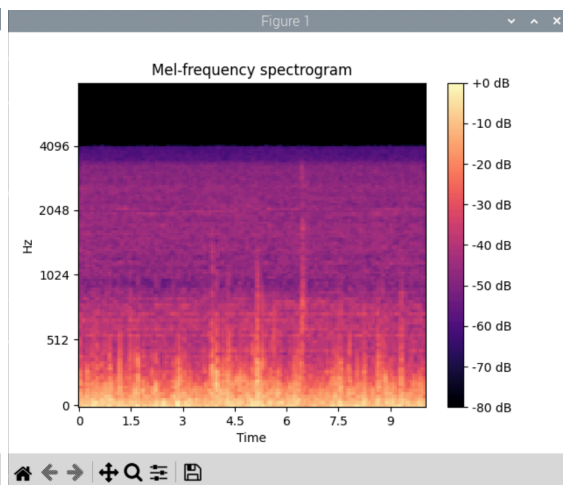
### Spectrogram



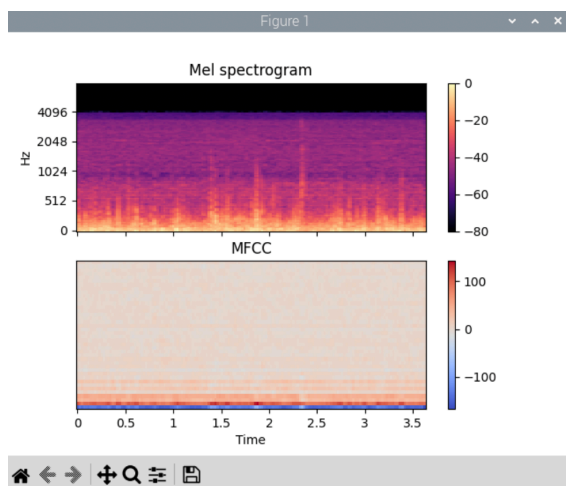
### Spectrogram and Chromagram



### Mel-frequency



### MFCC



## 6. Advanced Sound Analytics

File Edit Tabs Help

```
Say something!
Google Speech Recognition thinks you said hello my name is Alyssa
Time for Google Speech Recognition recognition = 1 seconds
Sphinx thinks you said oh my name is as
Time for Sphinx recognition = 14 seconds
(audio) pi@pb096:~/Desktop/INF2009_SoundAnalytics-main/Codes $
```

### Testing Other APIs

File Edit Tabs Help

```
Say something!
Google Speech Recognition thinks you said testing testing 1 2
Time for Google Speech Recognition recognition = 1 seconds
Sphinx thinks you said best thing that's been one two three
Time for Sphinx recognition = 11 seconds
100%|████████████████████████████████████████| 139M/139M [01:02<00:00, 2.34MiB/s]
Whisper thinks you said Testing, testing, 1, 2, 3
Time for Whisper recognition = 243 seconds
(audio) pi@pb096:~/Desktop/INF2009_SoundAnalytics-main/Codes $
```

### Implementing a wake word

File Edit Tabs Help

```
Say something!
Google Speech Recognition thinks you said wake up
Wake word accepted!
Time for Google Speech Recognition recognition = 6 seconds
(audio) pi@pb096:~/Desktop/INF2009_SoundAnalytics-main/Codes $
```

File Edit Tabs Help

```
Say something!
Google Speech Recognition thinks you said hello
Wake word denied!
Time for Google Speech Recognition recognition = 6 seconds
(audio) pi@pb096:~/Desktop/INF2009_SoundAnalytics-main/Codes $
```