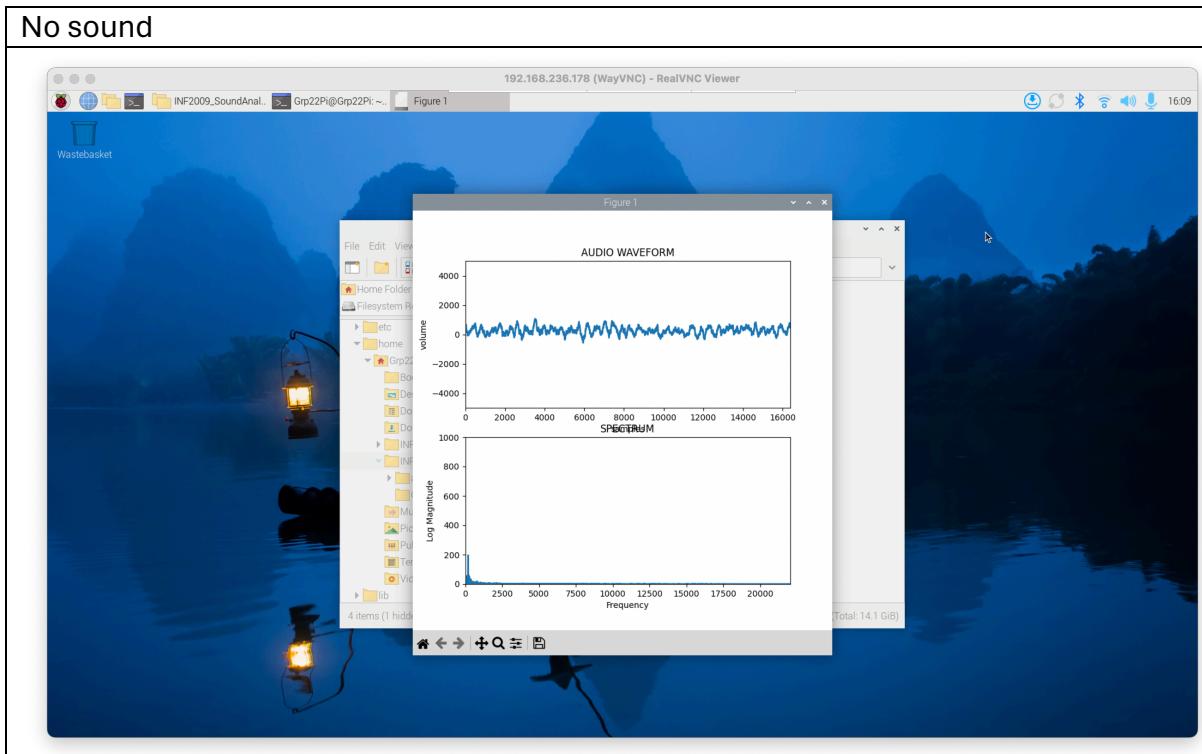


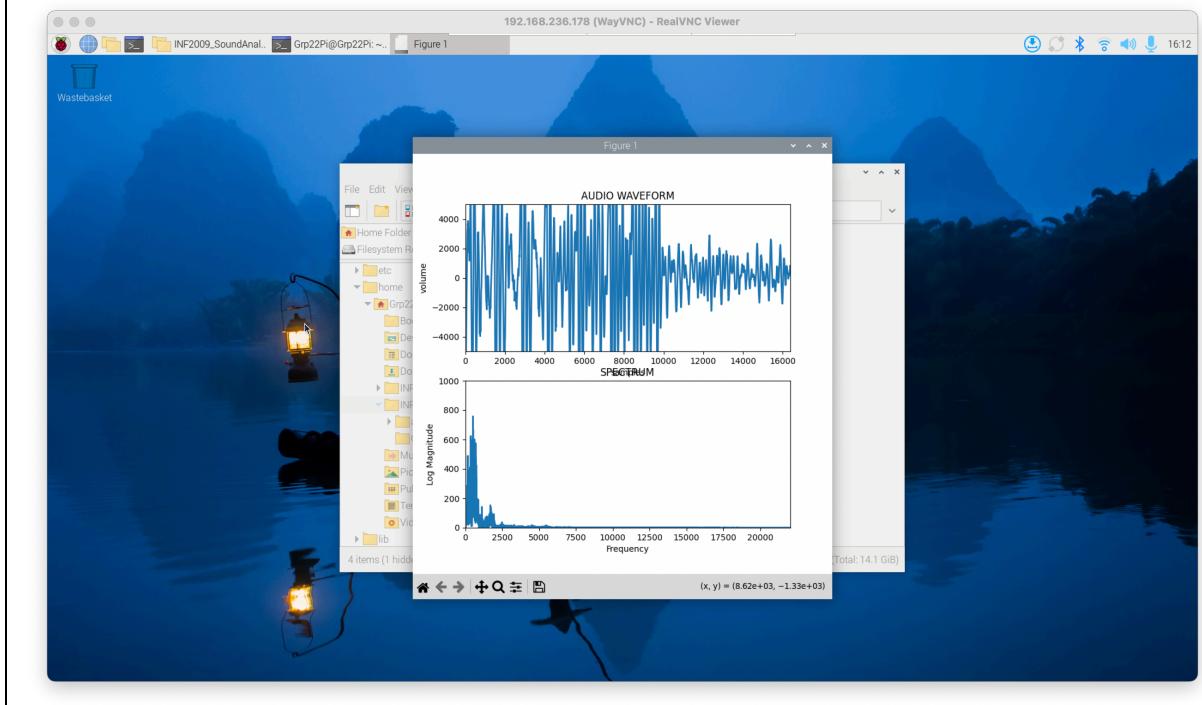
Lab 2: Sound Analytics Lab

Neo Lok Jun 2200882

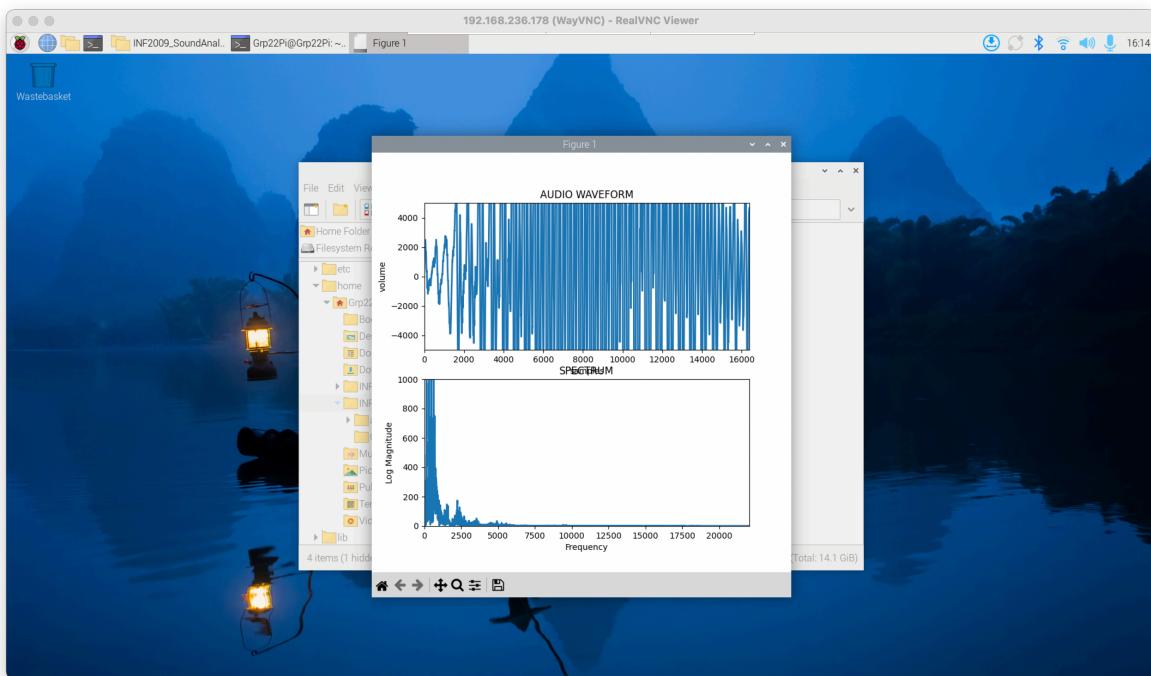
Introduction to Sound Processing with Python



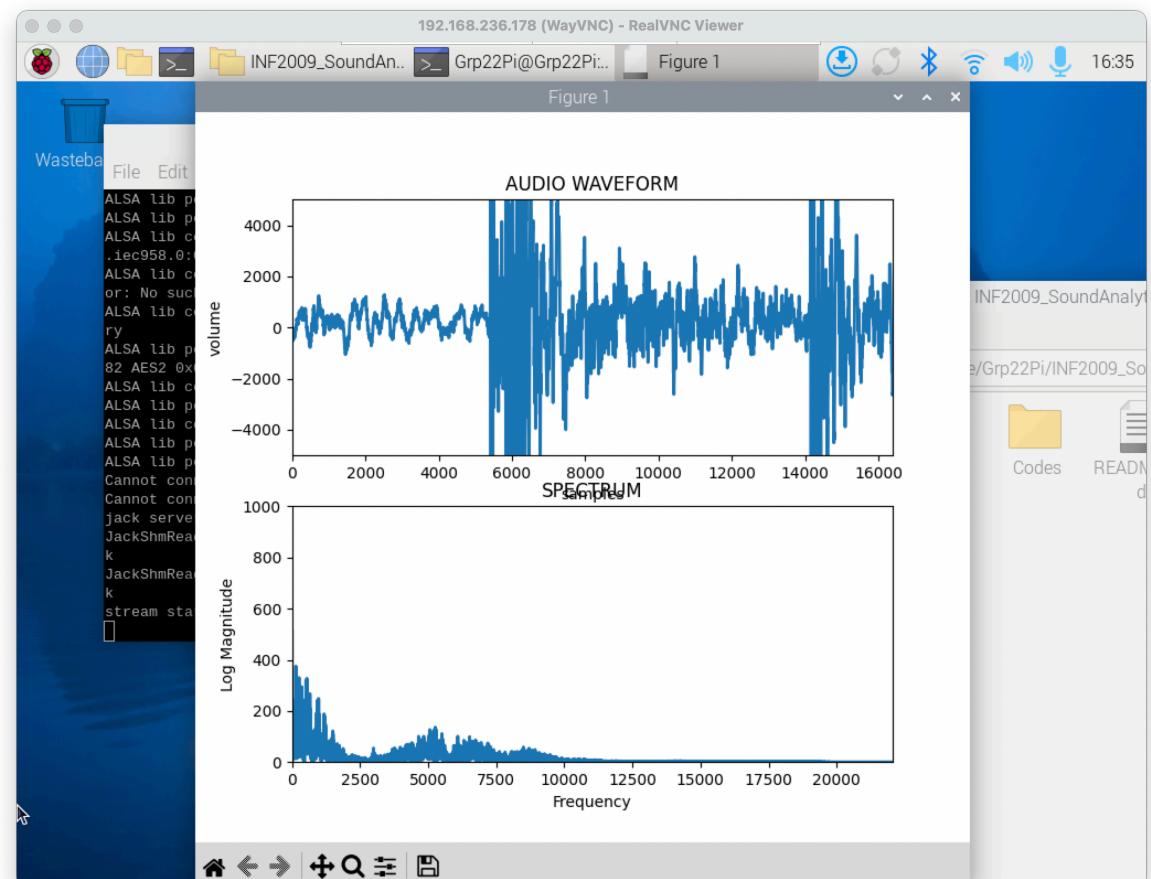
Speaking to microphone



Speaking even louder



Tapping noise

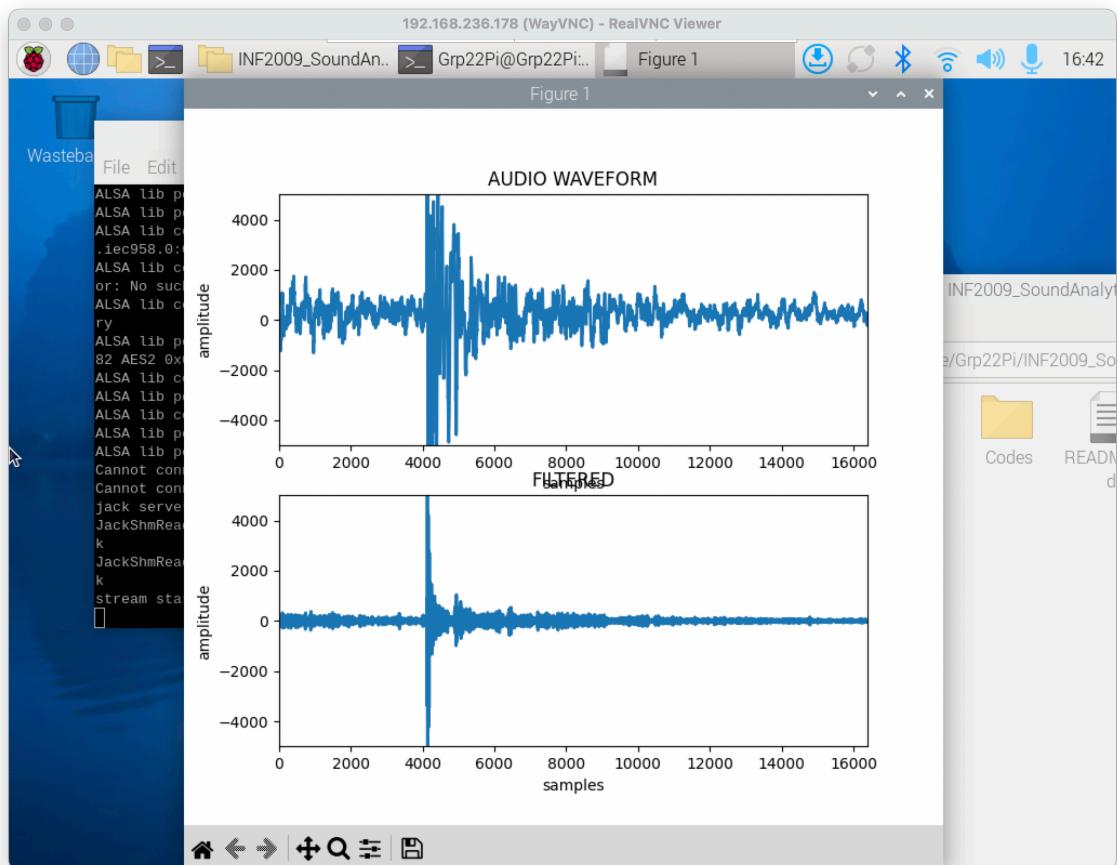


Basic Sound Analytics

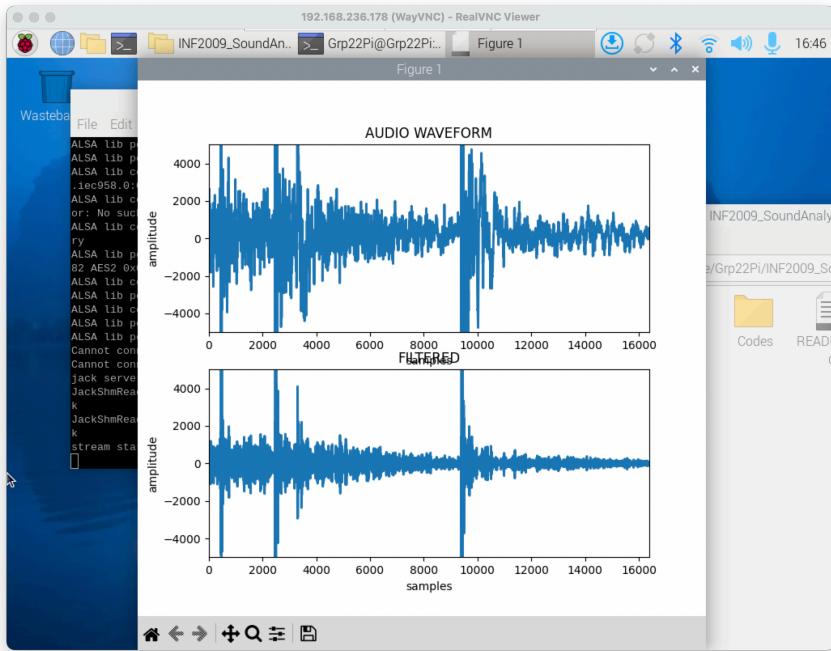
Filtering Task

- Tried to filter everything except tapping noise from audio.
- Filter frequency: 5000 to 10000

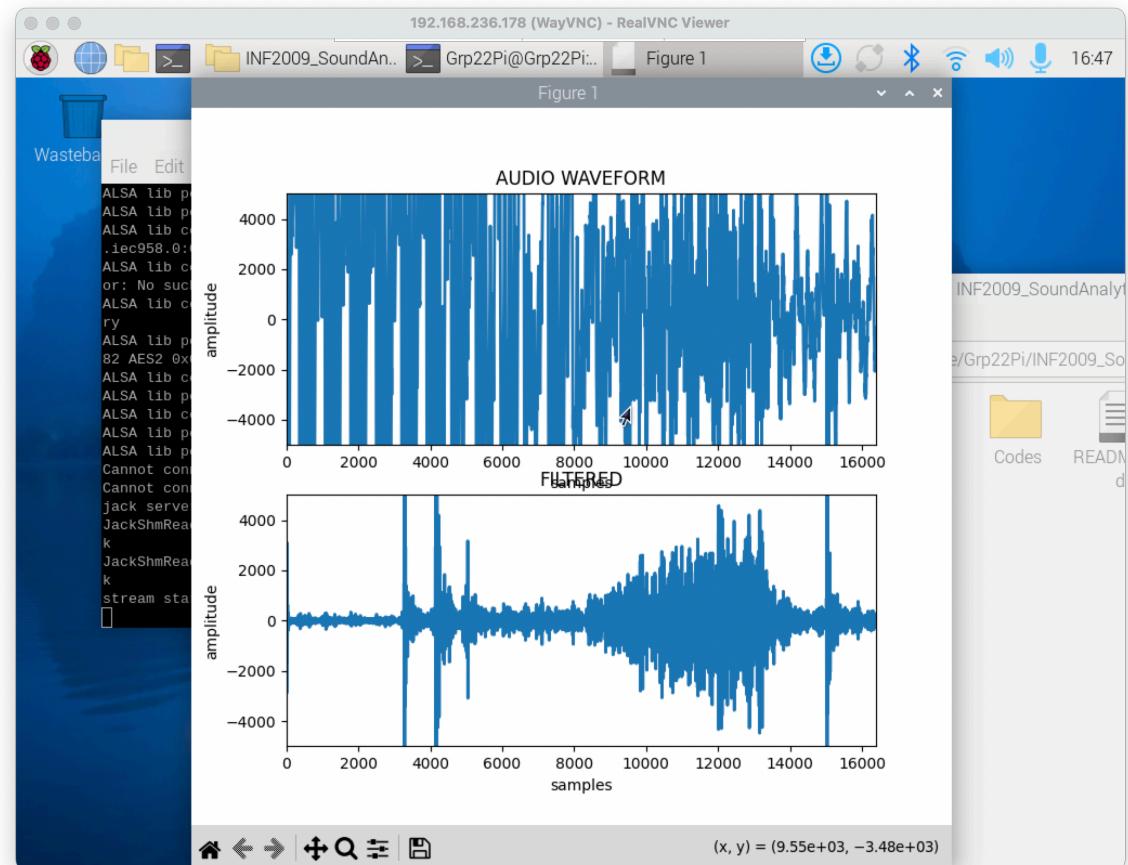
Just tapping noise:



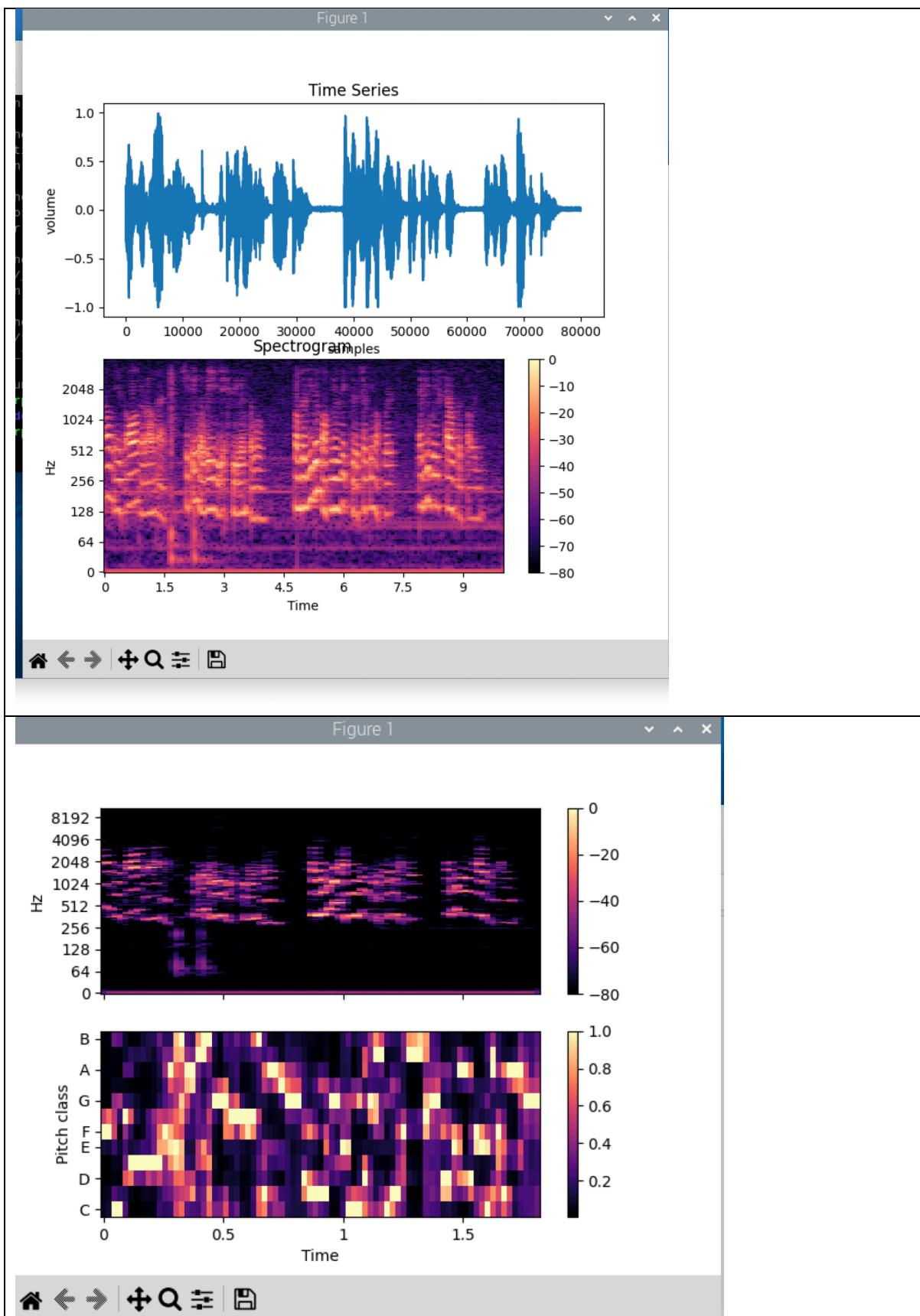
Tried tapping with some outside noise:

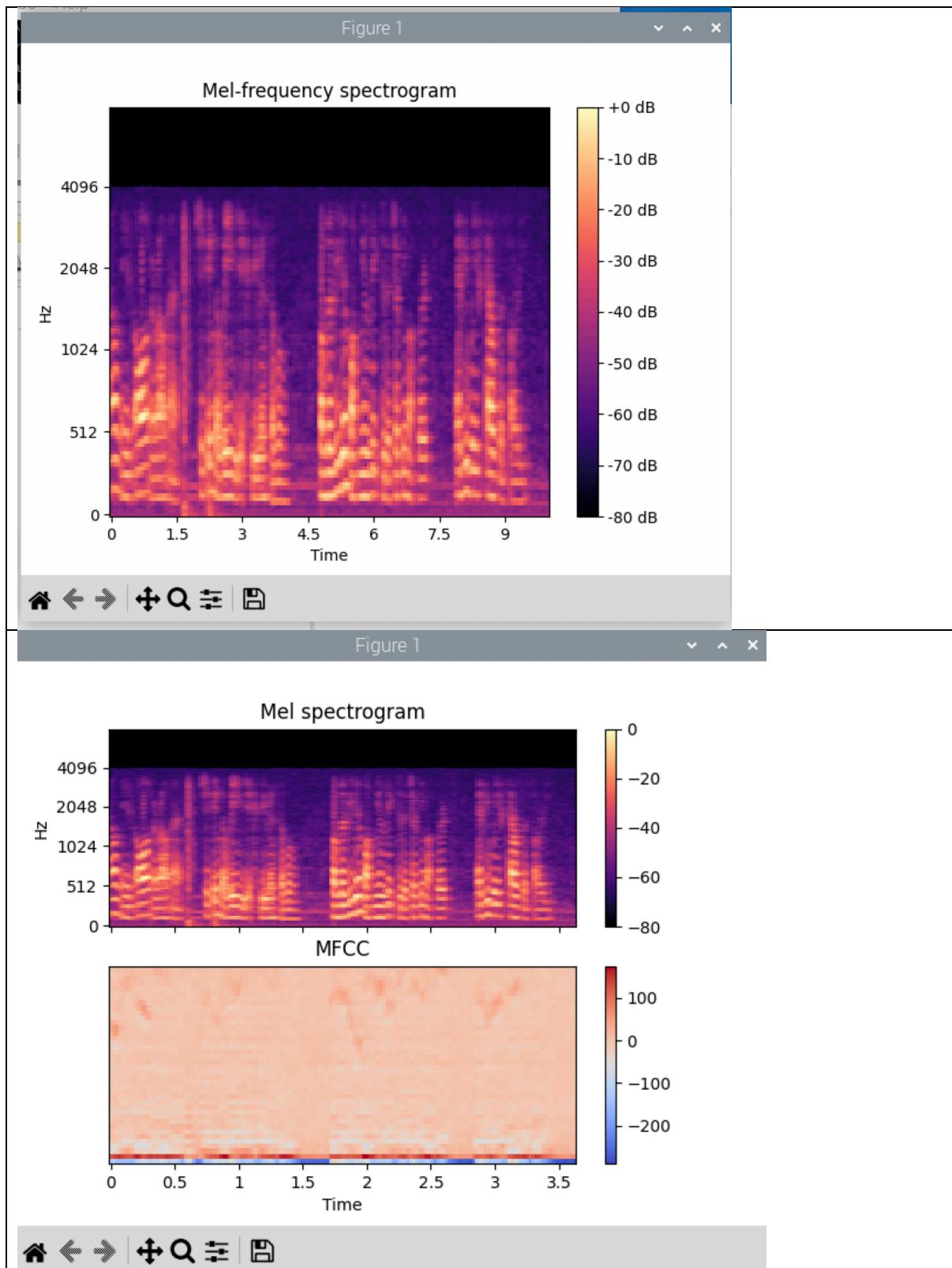


Tried speaking while tapping:



Feature Extraction





Advanced Sound Analytics

Spoken: "Sound is all around us"

Running Sample Code (Google Speech Recognition vs Spinx)

File Edit Tabs Help

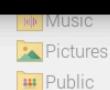
```
Say something!
Google Speech Recognition thinks you said sound is all around
Time for Google Speech Recognition recognition = 1 seconds
Sphinx thinks you said it's always all around us
Time for Sphinx recognition = 10 seconds
(audio) Grp22Pi@Grp22Pi:~/INF2009_SoundAnalytics $
```

Testing different APIs (Whisper + WIT.AI)

192.168.236.178 (WayVNC) - RealVNC Viewer

Grp22Pi@Grp22Pi: ~/INF2009_SoundAnalytics

```
File Edit Tabs Help
Say something!
Google Speech Recognition thinks you said song is all
Time for Google Speech Recognition recognition = 1 seconds
Sphinx thinks you said song is all around
Time for Sphinx recognition = 12 seconds
/home/Grp22Pi/INF2009_SoundAnalytics/audio/lib/python3.11/site-packages/whisper/__init__.py:1
50: FutureWarning: You are using `torch.load` with `weights_only=False` (the current default
value), which uses the default pickle module implicitly. It is possible to construct maliciou
s pickle data which will execute arbitrary code during unpickling (See https://github.com/pyt
orch/pytorch/blob/main/SECURITY.md#untrusted-models for more details). In a future release, t
he default value for `weights_only` will be flipped to `True`. This limits the functions that
could be executed during unpickling. Arbitrary objects will no longer be allowed to be loade
d via this mode unless they are explicitly allowlisted by the user via `torch.serialization.a
dd_safe_globals`. We recommend you start setting `weights_only=True` for any use case where y
ou don't have full control of the loaded file. Please open an issue on GitHub for any issues
related to this experimental feature.
    checkpoint = torch.load(fp, map_location=device)
Whisper thinks you said The sound is all around there.
Time for Whisper recognition = 89 seconds
Wit.ai thinks you said Sound is all around
Time for Spinx recognition = 4 seconds
(audio) Grp22Pi@Grp22Pi:~/INF2009_SoundAnalytics $
```



Wake word implementation

(Removed Whisper because it took too long)

Spoken phrase: "Hey Google"

Wake word: "Hey Google"

