

Sound Analyses

In this assignment, you are going to identify prominent frequencies within three sounds and then name those frequencies in terms of pitch and pitch-class space. If you wish, you'll also have an opportunity to step outside of 12TET pitch space for extra credit.

SETUP

For this assignment, you will need to use software capable of producing spectrograms or periodograms from audio signals. You are free to use whatever tool(s) you want, but I recommend Audacity, a free app that will do everything you need.

You will need several audio clips, which you can find at this link:
<https://www.dropbox.com/sh/kqe0x6y1q1c15zb/AADTGhhxOLAg2fi0itKtFmzUa?dl=0>

You will submit your answers as a Google Sheet. Here's how:

1. Make your own copy of the sheet at this link and fill it out:
https://docs.google.com/spreadsheets/d/15I-Nw-fm1REepp5PFFPBv6d_n1V7fMiJ44KMA6_-Y8Y/edit?usp=sharing
2. When you are done, click on the Share button in the upper right-hand corner of the Google Sheet window and click Get Shareable Link.
3. Go to the survey at the following link, paste *your* link in the "Your Sheet Link" field and submit:
<https://drive.google.com/open?id=1lIvcOg1n3J1NdNxnG7r3x-XD6iaqgMuZJ1NzKtpQ1Ao>

INSTRUCTIONS

In the audio folder, you will find three clips: a, b, and c. For each clip, do the following. I suggest that you fill your answers into the Google Sheet as you work.

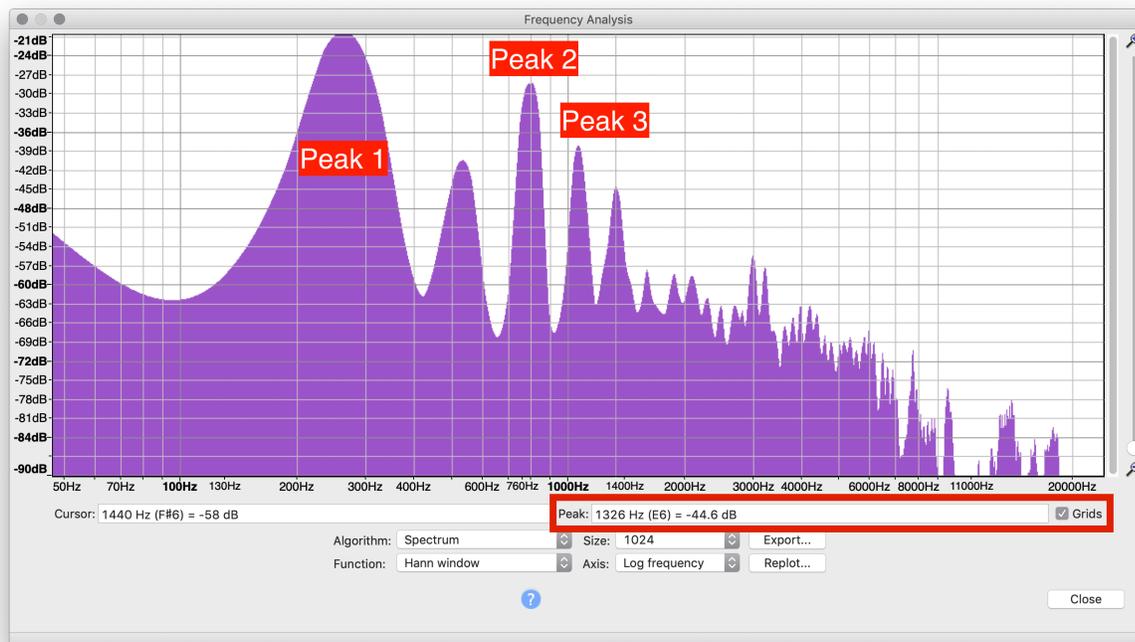
STEP 1

Produce a visualization of the clip's spectrum. This can take the form of either a spectrum plot / periodogram or a spectrogram. You do not need to submit this visualization as part of your assignment.

STEP 2

Identify the three (3) most prominent (i.e., highest on the dB scale) frequencies in the clip. Do your best to identify the frequencies within 10Hz. If you are struggling to identify them accurately, Audacity's Plot Spectrum function may help to identify them for you.

For example, here's a screenshot of Audacity's Plot Spectrum function applied to a recording of a clarinet's F3:



The three most prominent frequencies appear as the three highest peaks on the graph. By dragging the cursor over any of the peaks, Audacity will update the value of the Peak field, just beneath the class with the frequency of the peak.

Next, you'll make some calculations relating frequencies to pitches and pitch-classes. If you're not sure how to proceed, check out the Reference Materials document Frequencies, Pitches, and Pitch-classes in the FoMaS_Tools shared folder.

STEP 3

Convert your three frequency values into pitches in terms of the MIDI standard, where p_{69} is a pitch whose frequency $f_{69} = 440$ Hz. It's ok if you get non-integer pitch values.

STEP 4

Identify the pitch-class for each of the pitches you've identified.

STEP 5 (OPTIONAL, FOR EXTRA CREDIT)

For extra credit worth an additional 50% of this assignment's value, recalculate the pitch values and pitch-classes for each of the three frequencies in terms of a 10TET pitch space where p_{58} has $f_{58} = 440\text{Hz}$. Your answers should go into columns E and F in the Google Sheet.

STEP -1

You should submit your work as per the instructions in the SETUP section above.