

Assignment #2: Waterfall Plot

1 Prerequisite

The source code is available on my GitHub repository after assignment submission deadline. You can refer to the demo video included or README.md for the usage of this program.

- GitHub repository link: <https://github.com/eesoylark/waterfall-plot>

The program itself is simple. When it runs, it automatically starts to capture input audio can plot its waterfall plot accordingly. You can press “s” to save a screenshot of your waterfall plot and “m” to toggle between static and adaptive value mapping for the intensity of each frequency band.

2 Deliverables

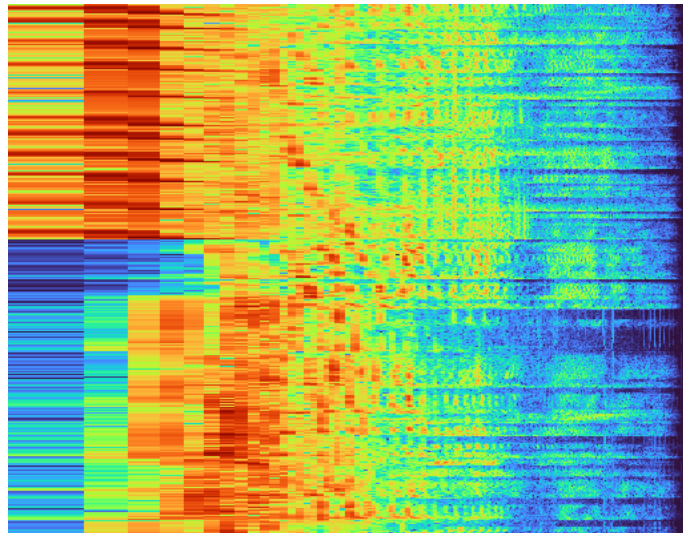


Figure 1: Spectrogram Screenshot

2.1 Choice of Signal

For the signal captured in the screenshot and the demo video, I chose a recent anime hit song- オトノケ (Otonoke) by Creepy Nuts, the reason behind which is that this song is not only catchy but also has a distinct change of pitch from verse to chorus as will be discussed later.

2.2 Characteristic and Discussion

As this signal is from that of a music, we can clearly see that the waterfall plot possesses a pattern of periodicity following the rhythm of the song. This screenshot is taken so that the transition of the verse and the chorus is shown in the middle. It's clear that during the verse, frequencies in the middle band have more intensity than the rest, while during the chorus, low frequency components are the dominant ones.