Audio Features Workshop 2024

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Assignment 1 - BPM Estimation

For the Kevin MacLeod track, By listening to the beat, the BPM is estimated to **115bpm** By calculating using librosa, the estimated BPM is: **129.2bpm**
For the track01ErosRamazotti.mp3, By listening to the beat, the BPM is estimated to **84bpm** By calculating using librosa, the estimated BPM is: **61.25bpm**

Assignment 2 - Harmonic Percussive Sound Seperation

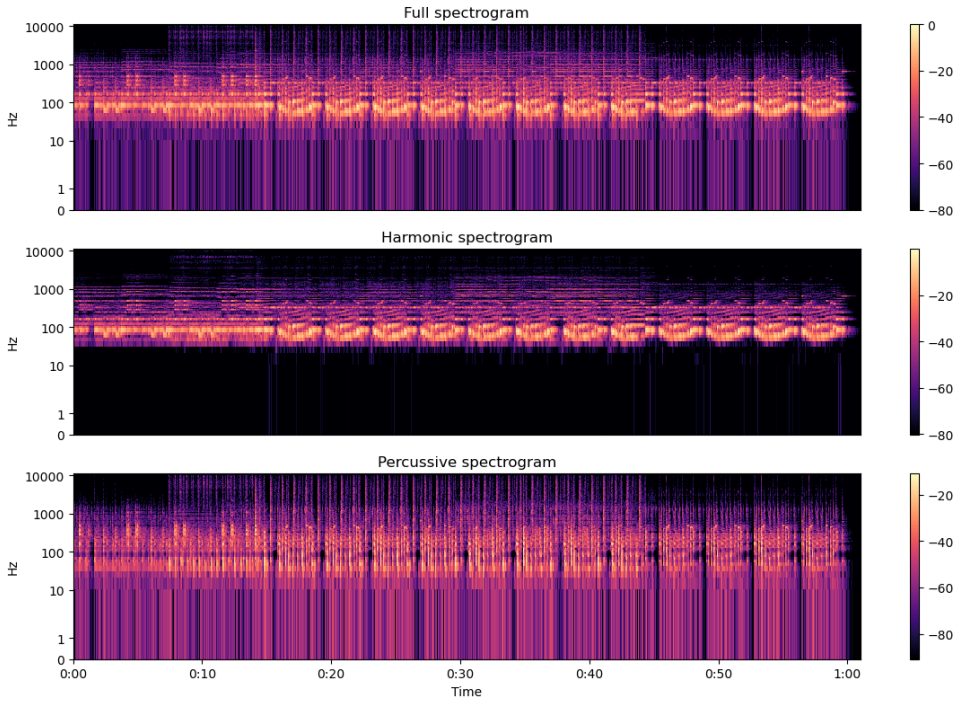

Figure 1: Harmonic Percussive Sound Separation Kevin McLeod

From the 2 plots (Figure 2 and Figure 1), we can see that the percussive spectogram has more defined peaks at regular intervals from which one may be able to estimate the bpm. The harmonic spectogram is more continuous. We see that for a high bpm sound like the Kevin McLeod track, the percussive spectogram shows and increase in the defined

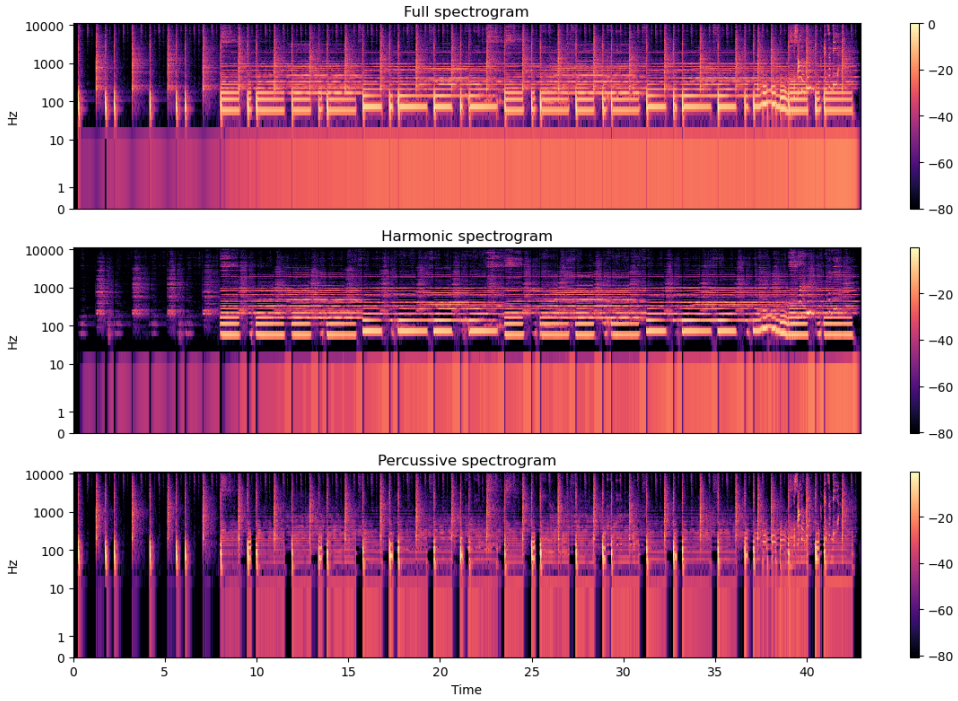

Figure 2: Harmonic Percussive Sound Separation Eros Ramazotti

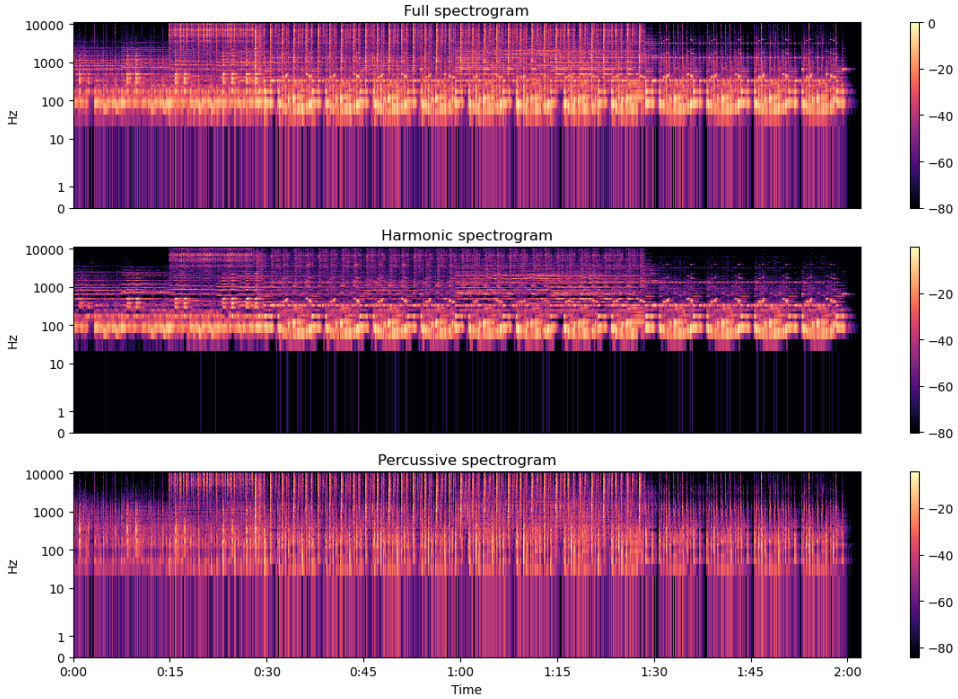

Figure 3: Harmonic Percussive Sound Separation Custom

energy spikes as compared to the lower bpm Eros Ramazotti (track01) track.

To get the above figure 3, we first selected a lower nfft and hoplength values to better derive frequencies for percussive sounds which need better frequency resolution as they occur in a small window. Next we add a filter (High-Pass), which eliminates any low

frequency noise from the audio file data. Finally, we normalize the audio data to get clearer peaks for the percussive sounds. Another thing to be noted is that with an increase in margin, the percussive data is more visible in the spectogram.

Assignment 3