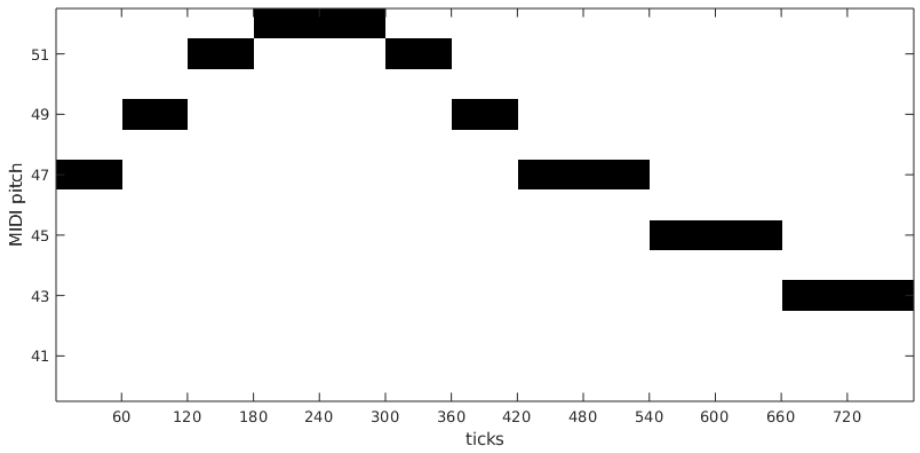
ECS7006 Music Informatics

Tutorial - Music Representations

1. You will find below the piano-roll representation for a music segment. Convert it into a list of MIDI messages, assuming a velocity of an active note to be at 100.



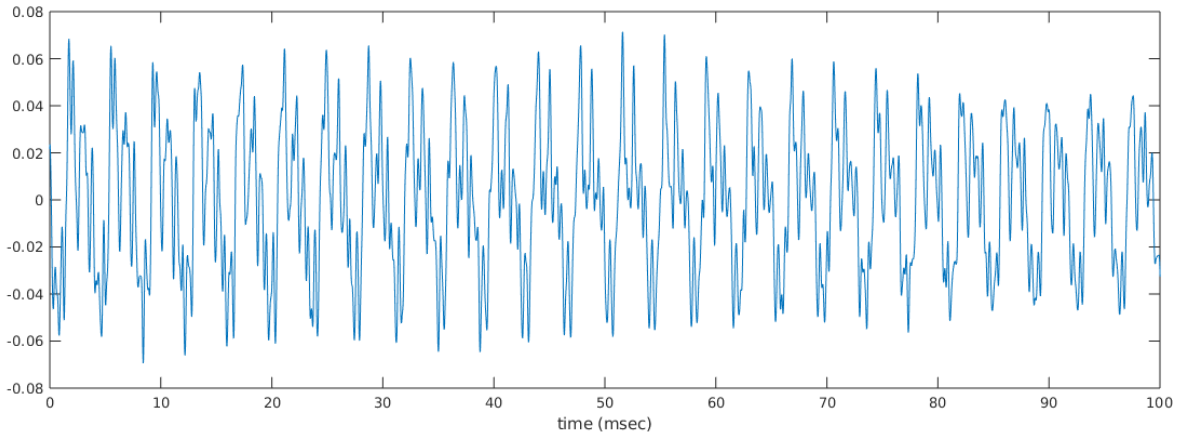
2. Compute the centre frequencies for MIDI notes 33, 45, 57, 69, and 81.

3. Common intervals in Western music include the following:

   - perfect fifth (7 semitones)
   - major third (4 semitones)
   - minor third (3 semitones)

   Compute the frequency ratio of the above mentioned intervals. What can be observed?

4. The below waveform shows a zoomed in section of a piano note:



Estimate the fundamental frequency of the above audio segment by counting the numbers of oscillation cycles. Based on the estimated fundamental frequency, compute the MIDI pitch that corresponds to the above segment.

5. The intensity of a sound has been increased by 30 dB. How many times has the sound intensity increased in terms of W/m^2?