Assignment 4

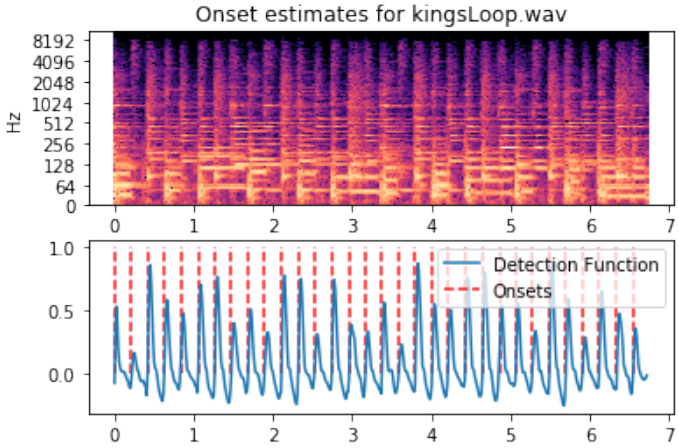
1. Reading (Due Monday November 5th by 11:59pm)
    a. Read Sections 1 and 2 of following article:
    Devaney, J. (2014). "Estimating onset and offset asynchronies in polyphonic audio-to-score alignment." Journal of New Music Research 43(3): 266–275.
    b. Briefly answer the following questions:
        i. What is MIDI-audio alignment?
        ii. What techniques are typically used for MIDI-audio alignment?
        iii. What is the difference between online and offline alignment?

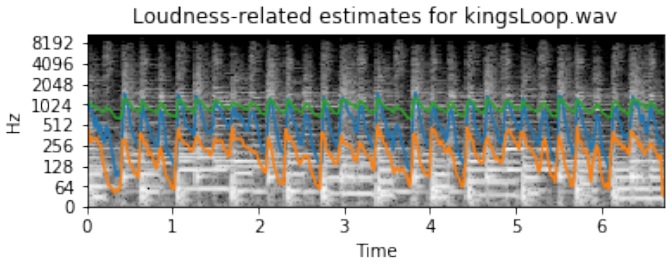
2. Python Exercise (Due Thursday November 8th by 11:59pm)
    a. Run the following VAMP plugs in Sonic Annotator (see the instructions below) on the audio files kingsLoop.wav, avm.wav, mozartSeg.wav, and chopinSeg.wav (use the default settings)
        i. Queen Mary plugin set (https://vamp-plugins.org/plugin-doc/qm-vamp-plugins.html)
            - Onsets: vamp: qm-vamp-plugins:qm-onsetdetector:onsets
            - Smoothed detection function: vamp:qm-vamp-plugins:qm-onsetdetector:smoothed_df
        ii. libxtract Vamp plugins (https://code.soundsoftware.ac.uk/projects/vamp-libxtract-plugins)
            - Loudness: vamp:vamp-libxtract:loudness:loudness
        iii. BBC Vamp Plugins (https://github.com/bbc/bbc-vamp-plugins/blob/master/README.md)
            - Intensity: vamp:bbc-vamp-plugins:bbc-intensity:intensity
            - RMS: vamp:bbc-vamp-plugins:bbc-energy:rmsenergy
    b. Import the audio and CSV files into Python to produce
        i. an audio file for each of the listed audio files with the original audio on one channel and the onset estimates on the other
        ii. the plots on pages 2-3 (ideally using some functions)

Sonic Annotator Instructions

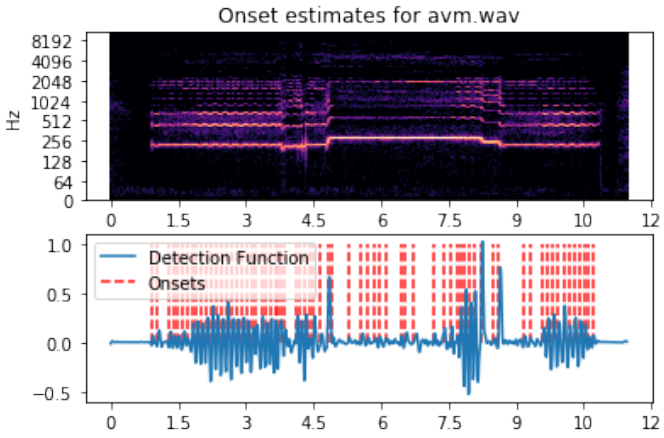
- For each plugin you will need to create a .n3 file, using the -s flag to specify a plugin. This allows you to batch process audio files with a particular plugin with particular settings (although for this assignment just use the default values)
    - E.g., `./sonic-annotator -s vamp:bbc-vamp-plugins:bbc-energy:rmsenergy > rms.n3`
- You will then need to put all of the audio file in the same directory and run each .n3 file on the directory using the -r flag to specify the directory, -t flag to specify the .n3 file, and the -w flag to specify csv (which writes to a CSV file)
    - E.g., `./sonic-annotator -r ~/Desktop/audioFiles/ -t rms.n3 -w csv`

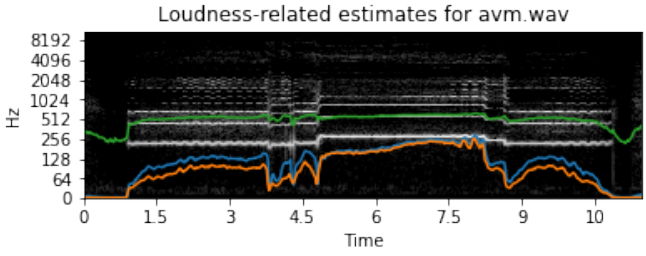
kingsloop.wav



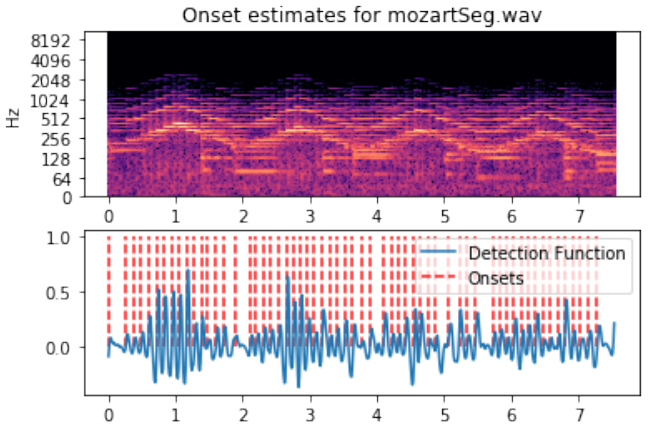


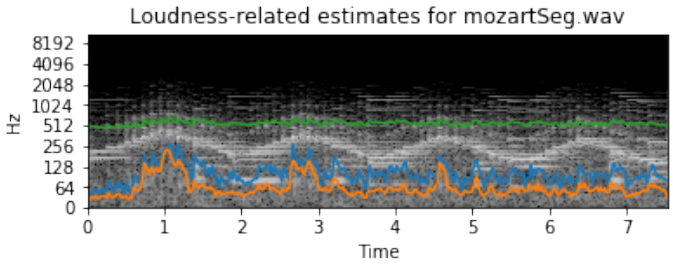
avm.wav





mozartSeg.wav





chopinSeg.wav