

Audio Signal Processing for Music Applications

10A(a) Peer-Assessment: A multi-resolution sinusoidal analysis

Sound from Freesound

- [ShamisenPercussion](#)
- [Orchestral_Loop_with_Oriental_Touch](#)

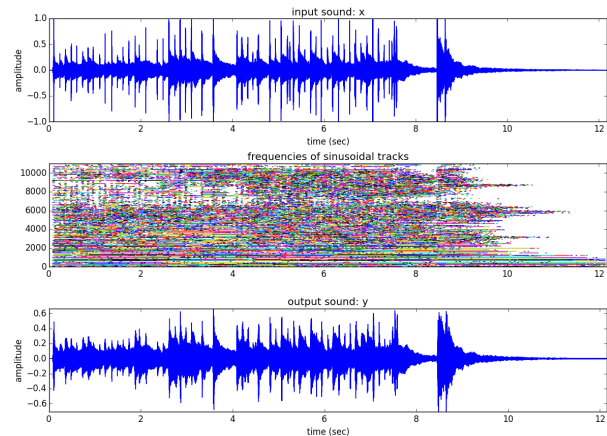
node:I converted file format by [this site](#).

1. ShamisenPercussion

The sound is very bright, and its pitch range is very wide(over the 5000Hz).

And it includes the short percussion sound from 3 - 4 instruments. They are roughly divided into the 3 part, ~2000Hz, ~7250Hz and above.

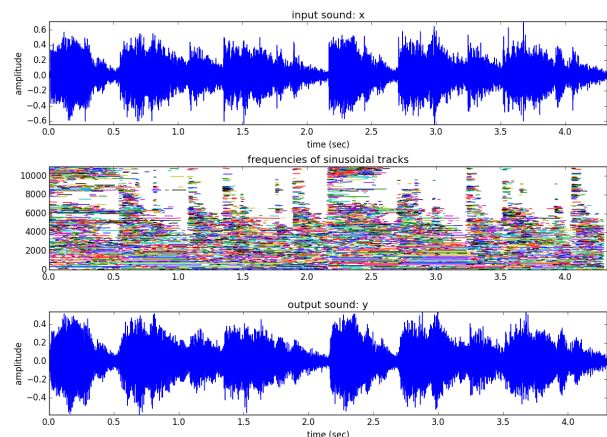
- band edges: 7250, 10500, 22050
- window & M:
blackman(2047)
hamming(2047)
hamming(980)
- window size :4096, 2048, 1024



2. Orchestral_Loop_with_Oriental_Touch

The sound is low tone. There may be 3 instrument, main melody, drum and ring like sound. These frequencies about ~1500Hz, ~4300Hz, and above.

- band edges: 1000, 4300, 22050
- window & M:
blackman(2047)
blackman(2047)
hamming(2047)
- window size: 4096, 4096, 2048



Advantages & Extesion to the HPR and HPS

The main advantage of multi-resolution analysis is that we can change the parameters according to the frequency. Especially by changing the window, we can keep the window size narrow (ex. blackman to low, hamming to high) and then we get time resolution also.

It will be effective to HPR and HPS also. Because multi-resolution analysis enables peak detection more accurately. To detect the f_0 and harmony, merging the result of peak detection of each band edges. Then we will find the f_0 and harmony.