

OnsetDetection

April 18, 2018

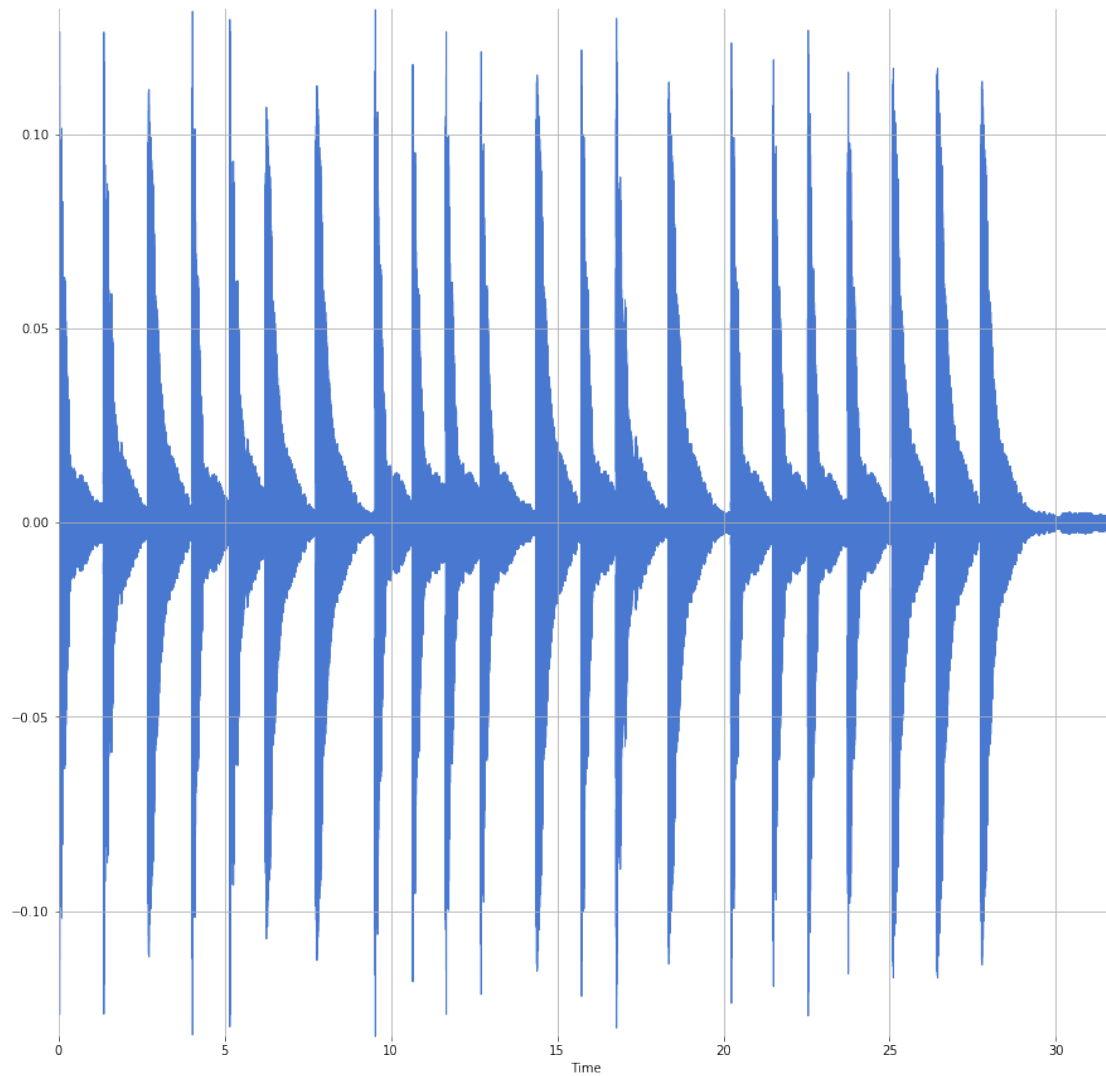
```
In [2]: %matplotlib inline
import numpy, scipy, matplotlib.pyplot as plt, IPython.display as ipd
import librosa, librosa.display
import stanford_mir; stanford_mir.init()
```

```
In [158]: x, sr = librosa.load('/Users/nickpourazima/GitHub/he-sm/AudioFiles/dynamic_cres_f_de
print(x.shape, sr)
```

```
(699338,) 22050
```

```
In [160]: plt.figure(figsize=(15, 15))
librosa.display.waveplot(x, sr)
```

```
Out[160]: <matplotlib.collections.PolyCollection at 0x157971320>
```



```
In [161]: onset_frames = librosa.onset.onset_detect(x, sr=sr)
          print(onset_frames) # frame numbers of estimated onsets

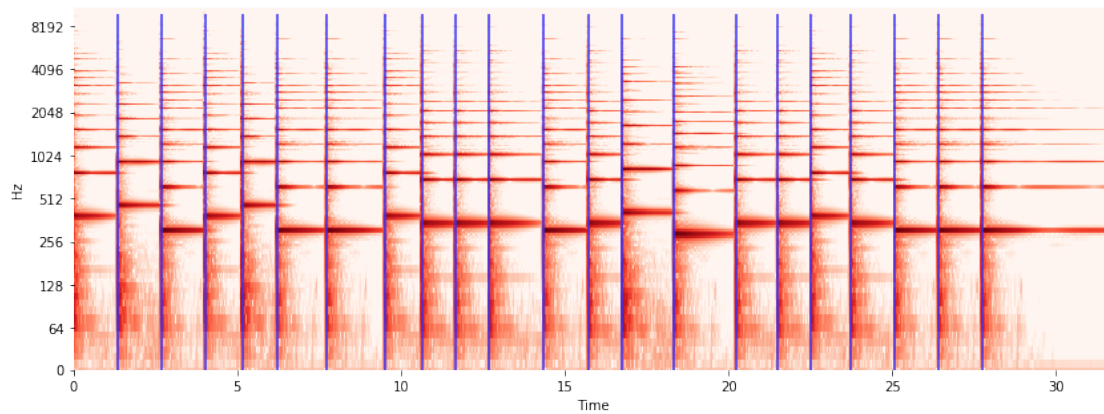
[ 58 116 173 222 268 333 410 458 502 547 618 677 722 789
 871 925 970 1022 1080 1137 1195]

In [162]: onset_times = librosa.frames_to_time(onset_frames)
          print(onset_times)

[ 1.34675737  2.69351474  4.01705215  5.15482993  6.22294785  7.7322449
  9.52018141 10.63473923 11.65641723 12.70131519 14.34993197 15.7199093
16.76480726 18.32054422 20.2245805  21.47845805 22.52335601 23.73079365
25.07755102 26.40108844 27.7478458 ]
```

```
In [163]: S = librosa.stft(x)
logS = librosa.amplitude_to_db(abs(S))
plt.figure(figsize=(14, 5))
librosa.display.specshow(logS, sr=sr, x_axis='time', y_axis='log', cmap='Reds')
plt.vlines(onset_times, 0, 10000, color='#3333FF')
```

Out[163]: <matplotlib.collections.LineCollection at 0x1579f3128>



```
In [164]: plt.figure(figsize=(14, 5))
librosa.display.waveplot(x, sr=sr)
plt.vlines(onset_times, -0.8, 0.79, color='r', alpha=0.8)
```

Out[164]: <matplotlib.collections.LineCollection at 0x14363f400>

