

OnsetDetection

April 16, 2018

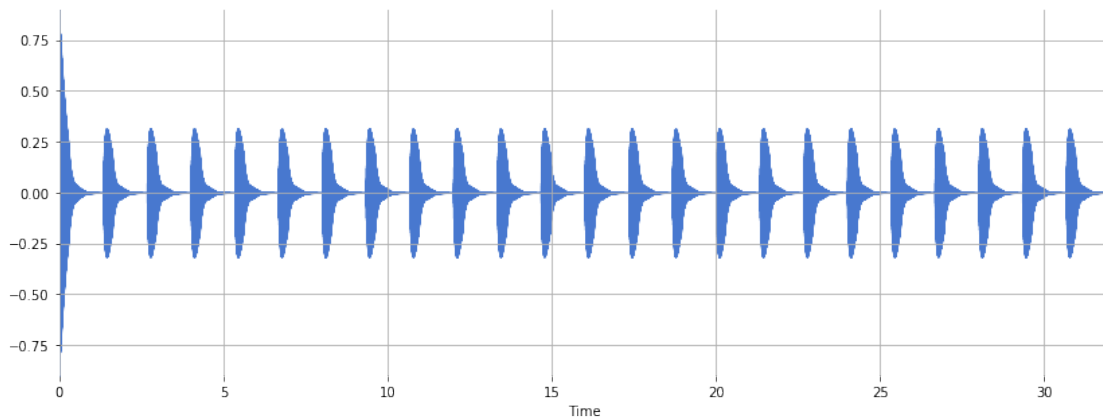
```
In [2]: %matplotlib inline
import numpy, scipy, matplotlib.pyplot as plt, IPython.display as ipd
import librosa, librosa.display
import stanford_mir; stanford_mir.init()
```

```
In [72]: x, sr = librosa.load('/Users/nickpourazima/GitHub/he-sm/AudioFiles/swing_click_44.1_1
print(x.shape, sr)
```

(705600,) 22050

```
In [73]: plt.figure(figsize=(14, 5))
librosa.display.waveplot(x, sr)
```

Out[73]: <matplotlib.collections.PolyCollection at 0x11f4bb0f0>



```
In [74]: onset_frames = librosa.onset.onset_detect(x, sr=sr)
print(onset_frames) # frame numbers of estimated onsets
```

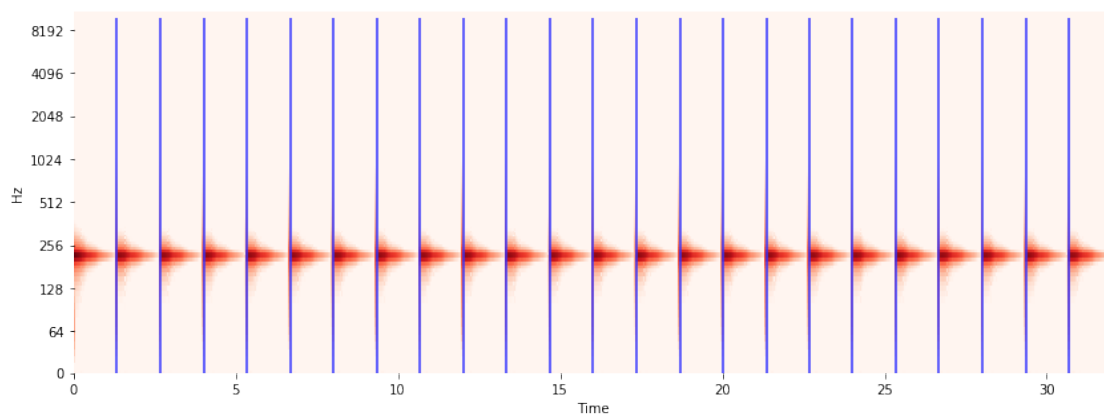
```
[ 58 116 173 231 288 345 403 460 518 575 633 690 747 805
 862 920 977 1034 1092 1149 1207 1264 1322]
```

```
In [75]: onset_times = librosa.frames_to_time(onset_frames)
        print(onset_times)
```

```
[ 1.34675737  2.69351474  4.01705215  5.36380952  6.68734694  8.01088435
  9.35764172 10.68117914 12.02793651 13.35147392 14.69823129 16.02176871
 17.34530612 18.69206349 20.01560091 21.36235828 22.68589569 24.00943311
 25.35619048 26.67972789 28.02648526 29.35002268 30.69678005]
```

```
In [76]: 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 [76]: <matplotlib.collections.LineCollection at 0x11f4ef9b0>
```



```
In [77]: 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 [77]: <matplotlib.collections.LineCollection at 0x11c127f60>
```

