Multimedia Systems

Practical Class P11

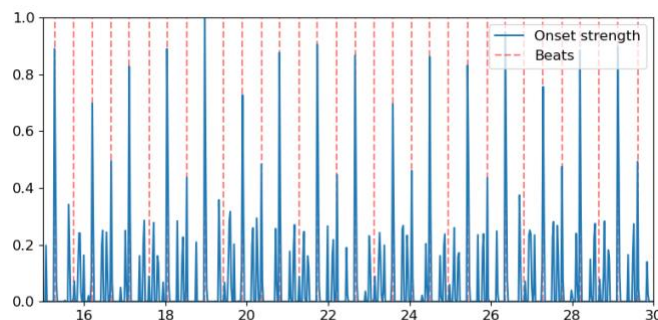### Beat

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1. Task1 – Beat Tapping (Sonic Visualiser)

- Open **"tap_example1.wav"**, **"tap_example2.wav"**, or **"tap_example3.wav"**, according to your musical proficiency level (e.g. 3 for experienced musicians, 1 for non-musician)
- Go-to Layer and then Add new time instants layer;
- Locate the ';' (semi-colon) key on the keyboard
- Put on headphones
- Press the space bar to start audio playback
- Tap the beats to the music using the ';' key

You can now listen back to the taps by pressing the space-bar again to restart playback (the beat taps will sound as "clicks").

Write down if you thought the taps were good

2. Task2 – Beat tracking (Python - notebook *.ipynb)

- For
    - **"tap_example1.wav"**
    - **"tap_example2.wav"**
    - **"tap_example3.wav"**

- Use librosa.beat.beat_track to estimate the beat locations and the global tempo:

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- Plot the above figure for the 3 examples.
- With the following code (or similar), create the clicks at beat times and listen to the result:

```
clicks = librosa.clicks(beat_times, sr=sr, length=len(x))
ipd.Audio(x + clicks, rate=sr)
```

- Comment the results, by making a subjective evaluation of the 3 outputs of the beat tracking (one paragraph).