|  |  |  |
| --- | --- | --- |
| Title | RUNNING WATERS | Spectrogram / Waveform |
| Artist | Jason Shaw | A picture containing animal  Description automatically generated |
| Composer | N/A |
| Album | Audionautix: Acoustic |
| Year | 2011 |
| Label | N/A |
| Copyright Information | Attribution 3.0 United States License. |
| Genre | Country |
| Source | Free Music Archive (http://freemusicarchive.org/music/Jason\_Shaw/Audionautix\_Acoustic/RUNNING\_WATERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_2-46) |
| File / Audio Format | MP3 Audio File (.mp3) |
| File Size | 6.35 MB |
| Number of Channels | 2 |
| Sample Rate | 44100Hz |
| Bit per Second | 320000 |
| Beats per Minute (BPM) | 160 |
| Duration | 00:02:46 |

|  |  |  |
| --- | --- | --- |
| Title | Veloma | Spectrogram / Waveform |
| Artist | Fabrizio Paterlini |  |
| Composer | N/A |
| Album | Viandanze (EP) |
| Year | 2012 |
| Label | Clinical Archives |
| Copyright Information | Attribution-NonCommercial-ShareAlike 3.0 International License. |
| Genre | Classical |
| Source | Free Music Archive (http://freemusicarchive.org/music/Fabrizio\_Paterlini/Viandanze\_EP/Veloma) |
| File / Audio Format | MP3 Audio File (.mp3) |
| File Size | 6.79 MB |
| Number of Channels | 2 |
| Sample Rate | 44100Hz |
| Bit per Second | 320000 |
| Beats per Minute (BPM) | 116 |
| Duration | 00:02:55 |

|  |  |  |
| --- | --- | --- |
| Title | Hallon | Spectrogram / Waveform |
| Artist | Christian Björklund | A picture containing object  Description automatically generatedA close up of a piece of paper  Description automatically generated |
| Composer | Christian Björklund |
| Album | Skapmat |
| Year | 2017 |
| Label | Phonocake |
| Copyright Information | Attribution-NonCommercial-ShareAlike 3.0 Unported (CC BY-NC-SA 3.0) |
| Genre | Electronic |
| Source | Free Music Archive (http://freemusicarchive.org/music/Christian\_Bjoerklund/Skapmat/christian\_bjoerklund\_-\_skpmat\_ep\_-\_01\_-\_hallon) |
| File / Audio Format | MP3 Audio File (.mp3) |
| File Size | 10.0 MB |
| Number of Channels | 2 |
| Sample Rate | 44100Hz |
| Bit per Second | 286000 |
| Beats per Minute (BPM) | 108 |
| Duration | 00:04:54 |

2.2) One advantage that time-frequency analysis has over waveform analysis is that patterns in frequency can be seen much more clearly and a general feel for the song can be easily derived from the visualisation. Time-frequency analysis allows us to see general trends in frequencies better than waveform analysis as the waveform visualisation shows more insight in amplitude over frequency. This can be clearly seen from the “Hallon” visualisations as the spectrogram clearly shows the peaks in certain frequency over time and the different levels of strength throughout the song whereas the waveform shows the peaks in strength, but it is hard to ascertain what frequencies are more prominent.