**Feature Extraction Tools:**

*Note that MIDI and Audio are different ways of representing music*

**MIDI:** jSymbolic from jMIR

* What is MIDI: <https://blog.landr.com/what-is-midi/>
* Download: <https://sourceforge.net/projects/jmir/files/>
  + Navigate to jSymbolic2 folder
  + Run the following code:
    - java -Xmx6g -jar jSymbolic2.jar input\_folder\_to\_process output\_feature\_values.xml output\_feature\_definition.xml
    - Feature Description: <http://jmir.sourceforge.net/manuals/jSymbolic_manual/featureexplanations_files/featureexplanations.html>

**Audio:** Essentia, librosa, jAudio

* Essentia: <https://essentia.upf.edu/>
* Librosa: <https://librosa.org/doc/main/feature.html>
* jAudio: Doesn’t have as many features compared to the above
  + Download: <https://sourceforge.net/projects/jmir/files/>
  + Feature Description: <http://jaudio.sourceforge.net/jaudio10/javadoc/jAudioFeatureExtractor/AudioFeatures/package-summary.html>

**File Conversion**

**.mp3 to .wav:**

* pydub: <https://github.com/jiaaro/pydub>
  + *If you have troubles downloading and using ffmpeg, you might have to manually download and put in the binaries*