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Computational Musicology
Assignment 4

1)

MIDI-audio alignment is a process that involves analyzing audio files and using extracted data to match events in the audio files to corresponding MIDI data (on a piano roll, sequence, etc.).

2)

Two common methods for MIDI-audio alignment are the dynamic time warping method and the hidden Markov models technique. Both essentially compare audio and midi/score data using fairly elaborate statistical and temporal analysis to accomplish alignment.

3)

Online MIDI-audio alignment occurs in real time by processing live incoming audio and has long been seen as a way to create accompaniment for soloists and ensembles. Online alignment has a number of performance/creative applications. Offline alignment is the more utilitarian process and does not occur in real time and does not use an incoming stream of audio data. Offline alignment has a number of applications from performance analysis to signal processing and recognition.