

Audio-to-Score Alignment In the Audacity Audio Editor

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Abstract: Audacity is an open-source audio editor. We have integrated our score alignment tools (*portsmf*, a library for music representation, and *scorealign*, a library for audio-to-audio and audio-to-score alignment) into Audacity. With our extension, a user can automatically synchronize standard MIDI files to audio files. The display then shows MIDI data, in piano roll notation, along with the audio waveform. This can annotate waveforms to make searching and browsing simpler, extract tempo information from audio files, show note onsets, and create MIDI files with timings that match given audio performances. The process of extending Audacity is also establishing an API for dynamically loadable score-alignment modules so that other researchers studying or comparing alignment algorithms can use Audacity to visualize, test, and evaluate alignment techniques. The present alignment is based on chroma vector features with some post-processing techniques to improve timing accuracy. It typically runs about 20 times faster than real time. As part of our work on alignment, we have also created a library for working with MIDI data and tempo information.