

Research of Loudness Measurement in Expressive Performances

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MIDI file

- Computer/Performer Interaction Programming with MIDI in C++:
<http://improv.sapp.org/> by Craig Stuart Sapp
a library of C++ classes optimized for MIDI I/O and a set of examples demonstrating the functions and capabilities of those classes.
more software
<http://ccrma.stanford.edu/~craig/>

MIDI File

- Java
- Javax.Sound.Midi
 - <http://java.sun.com/j2se/1.4.1/docs/api/javax/sound/midi/package-summary.html>
 - Provides interfaces and classes for I/O, sequencing, and synthesis of MIDI data

MIDI File

- Matlab
- <http://www.jyu.fi/musica/miditoolbox/>
 - The MIDI Toolbox is a compilation of functions for analyzing and visualizing MIDI files in the Matlab computing environment
 - `nmat = readmidi(filename);`
- <http://www.kenschutte.com/midi/>
 - Examples of MIDI reading and writing

Audio File

- WAV to MIDI.... <http://www.intelliscore.net/>
- Solo Explorer: <http://www.recognisoft.com/>
 - Transfer wav to MIDI
- Amazing MIDI
<http://www.pluto.dti.ne.jp/~araki/amazingmidi/>
- <http://www.audioutilities.com/midi-converter/convert-wav-mp3-to-midi.htm>
- Operations of wav file in Matlab (FYI)
- <http://www-ccs.ucsd.edu/matlab/techdoc/refbycat/group15.html>

Audio File – For Linux

- **rmmps** : a command-line program that analyses sound files and creates graphics of the RMS (loudness) curve (loosely termed the wave form) in Encapsulated Postscript (EPS) form
- <http://dionysos.music.ed.ac.uk/michael/software/rmmps/rmmps.html>
- **MARSYAS**: a software framework for rapid prototyping and experimentation with audio analysis and synthesis with specific emphasis to music signals and [Music Information Retrieval](#).
- <http://opihi.cs.uvic.ca/marsyas>

Audio File

- Maaate: a set of libraries that enable audio signal analysis and feature calculation in the compressed/frequency domain
<http://www.cmis.csiro.au/maaate/>
- Papers and Books:
- Repp, B. H. A microcosm of musical expression: II. Quantitative analysis of pianists' dynamics in the initial measures of Chopin's Etude in E major.
- Simon Dixon: [On the analysis of musical expression in audio signals](#)
- [Real Time Tracking and Visualisation of Musical Expression](#)

Audio File

- Reference:
- [Implementing Loudness Models in MATLAB](#)
- Psychoacoustics : Facts and Models by [Hugo Fastl](#), [Eberhard Zwicker](#)
- A useful website:
- www.music-ir.org/evaluation/tools.html