ALLIGNMENT GROUP REPORT, ISE 575/b **3/20/2006**

Meghen Miles
Eric Cheng
Erdem Unal

1) Audio Alignment Software in Matlab

This is research software available *as is* for computing the alignment between two audio performances of the same music. If you have a CD recording and a MIDI version of the same song, then you can synthesize the MIDI file, e.g. using TiMidity++ and perform an alignment. The result will tell you the correspondence from audio to MIDI, which is effectively a full polyphonic transcription of the audio.

The Matlab code is here, including this short description. You can read more about audio alignment in these papers.

2) MATCH: Music Alignment Tool CHest

This software performs alignment of audio files using the on-line time warping (OLTW) algorithm. For details of the implementation see:

- *Live Tracking of Musical Performances Using On-Line Time Warping*, Simon Dixon, DAFx'05, 8th International Conference on Digital Audio Effects, 20-22 September 2005, Madrid, Spain
- *MATCH: A Music Alignment Tool Chest*, Simon Dixon and Gerhard Widmer, ISMIR 2005, 6th International Conference on Music Information Retrieval, 11-15 September 2005, London, England

System requirements**:** Java 1.5 (run-time environment)

Download: MATCH version 0.9.1 (all platforms)

3) Dynamic Time Warping

Follow these links and you will learn what alignment is and how alignment of two inputs is performed. This is not a direct explanation of what we are looking for, but the brief theoretical idea that is used for designing any kind of alignment software. If you understand DTW well, you can even develop your own alignment software.

http://www.ee.columbia.edu/~dpwe/resources/matlab/dtw/

http://www.merriampark.com/ld.htm