INFO-I400 / MUS-N468 : Music Informatics

Spring 2007

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Classes TR 1:00 – 2:15 INFO 107 (10th + Woodlawn)

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Office Hours MW 4-5 (Raphael)

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Web Page http://www.music.informatics.indiana.edu/courses/I400

Course Material

This course introduces undergraduate students to the field of Music Informatics, in which we treat music as data, and demonstrate the usefulness of this perspective. We will cover a variety of topics including music representations, music audio and time-frequency (Fourier) representations, learning key and metric structure through "bag of notes" models, music similarity, query-by-humming, copyright, the legacy of Napster, and audio data compression (e.g. MP3). The course will include regular demonstrations of interesting and accessible music research including composition by computer, expressive performance synthesis, and musical accompaniment systems. Students will be asked to perform computer experiments, and to research and write about various topics. While only Junior/Senior standing is prerequisite, students should have some experience with computing and should be open to viewing music from a scientific perspective.

Homework There will be homework assignments consisting of computing experiments, problem solving, and expository writing.

Grading

Homework (Computing+Writing)	45 %
Midterm (in class March 1)	20 %
Final Exam	25 %
Class Participation (mandatory)	10 %

Course Material

1. Symbolic Representations
   (a) Visualizing Music Data
   (b) "Bag of Notes" Model
   (c) Key Recognition
   (d) Meter Analysis
2. Music Similarity
   (a) Metadata
   (b) Music Recommendation Systems (text similarity)
   (c) Edit Distance between Melodies (symbolic similarity)
3. Digital Audio
   (a) Representations and Aliasing
   (b) Pitch and Periodicity
   (c) Ratios and Intervals
   (d) Equal Temperament
   (e) Overtone Series and Timbre
   (f) Fourier Representations
4. Music on the Internet
   (a) Compression and Streaming
   (b) Copyright
   (c) Napster and its Legacy

We will see weekly demonstrations of current music research possibly including:

- Composition by computer in familiar styles
- Computer-generated jazz improvisation
- Accompaniment systems for classical music
- The Variations-3 digital library project
- Synthesizing expressive piano performance (Rencon)
- Audio illusions
- Musical collaboration over the Internet
- Audio Mosaicing