Symbolic Musical Analysis

CS 275B/Music 254
Practicalities
Course context

- **Music 253: Symbolic Musical Data**
  - How to **encode** musical data sets
    - Notation
    - MIDI/sound
    - Logical content

- **Music 254 Symbolic Music Analysis**
  (Music Query, Analysis, and Style Simulation)
  - How to **decode** musical data sets
    - **Query** = data **extraction**
    - **Analysis** = data **evaluation**
    - **Style simulation** = data **assessment and manipulation**
Elements of the course

_SAMPLE:
- **Query**: *ThemeFinder* (melody)
- **Analysis**: *Humdrum* (harmony, rhythm, melody)
- **Style simulation**: *Humdrum* (involves integration of other operations)

**Project part:**
- (a) literature/site survey
- (b) tool/software development
- (3) presentation and write-up
**Topic schedule**

- **Musical topics:**
  - Week 2: Melody; data sources; similarity
  - Week 3: Harmony; current work
  - Week 4: Rhythm; current work

- **Methodological topics (vary from year to year):**
  - Week 5
  - Week 6
  - Week 7
  - Week 8

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Contexts and resources
Symbolic Musical Information Scheme

- No universal code
- Notation (Finale, SCORE)
- Logical data (kern)
- Data interchange
- Musical data as IP

No universal translator
Symbolic Musical Analysis Scheme

- Musical style
- Data interchange
- Musical data as IP
- Procedural analysis
- Query/retrieval

Data analysis

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Data resources at CCARH

Monophonic only
- Essen database (folk music)
- ThemeFinder repertories

Polyphonic
- KernScores (keyboard)
- MuseData (chamber, orchestral)
Query (Retrieval) via ThemeFinder

Search form

- **Repertory**: ALL
- **Pitch**: Empty
- **Interval**: Empty
- **Scale Degree**: 13715
- **Gross Contour**: Empty
- **Refined Contour**: Empty
- **Location**: Any
- **Mode**: Any
- **Meter**: Empty

Submit Search

Responses


2. Schubert, Franz (1797-1828), Symphony No. 4 in C Minor, "Tragic", 4th Movement, 1st Theme

3. Weber, Carl Maria Von (1786-1826), Peter Schmoll und Seine Nachbaren, Overture, 1st Theme
Music search

Meta-data vs Semantic searching

Generic objects
- fruit
- jars
- cloths

Ambiguities

Intermediation

Basic colors
- blue
- green
- white

Categories

Gradations

Specific objects
- peaches
- vase
- apricot

Specific colors
- teal (blue)
- forest (green)
- off-white

Amico (1997-2005)

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Major areas of music analysis
Feature extraction and analysis

Voices, textures

Articulation, dynamics

Tonal relations

From the work of Steven Malinowski

Off the grid
Musical style (analysis)

Score-based: conventional

Performance-based: event-based, comparative analyses
DNA-sequencing algorithms

Dang Vu: feature propagation in improvised Vietnamese chamber music (adaptation of genetic analysis sw)

Horse hemoglobin > music (Gene2Music, UCLA)
Musical style (simulation)

Work of David Cope (UCSC)
Data interchange

- CS 275A
  - MusicXML
  - MEI (in progress)
  - MIDI (common default)

(Data supply)

- CS 275B (if relevant)
Other possible areas of study

- Procedural analysis
- Structural analysis
- Style/feature clusters

Methods from other disciplines
- Linguistics
- Mathematics
- Psychology/cognition
- Information theory

- New representations
  - Non-Western music
  - Pre-tonal music
  - Post-tonal music

- Audio/symbolic linking