

CMPE 58P - Lecture 2.

Machine Listening

Introduction, Course Structure, Applications of audio and music

signal processing, Audio Representations

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Useful Resources

- ▶ Music Representations (MIDI, Score),
- ▶ Musical constructs: rhythm, time signature, harmony, key, mode, maqam, chord symbols

Useful Resources

- ▶ Freesound
 - ▶ Free samples of sounds: Creative Commons License
 - ▶ <http://www.freesound.org>
- ▶ LilyPond
 - ▶ Text based Music Notation Language
 - ▶ lilypond.org

Music Notation



The tempered chromatic scale

- ▶ Interval between consecutive pitches: 100 cent



Pitch Alterations, Semitones, Quartertones

-150 -100 -50 0 50 100 150



Turkish/Arabic/Indian Scales

- ▶ Books say: A semitone (=100 cent) interval is subdivided into 9 intervals
- ▶ Can sound weird with MIDI as



Turkish pitch alterations

| Turkish | English | Ratio | Cent |
|----------------|--------------------|-------|------|
| koma | (comma) | 1/9 | 23 |
| bakiye | (small half tone) | 4/9 | 90 |
| küçük mücennep | (large half tone) | 5/9 | 114 |
| büyük mücennep | (small whole tone) | 8/9 | 180 |
| tanini | (large whole tone) | 9/9 | 204 |
| artık ikili | (augmented second) | 12/9 | 271 |

Turkish pitch alterations, LilyPond macros

| | | | |
|---------------|------|-----|------|
| KOMA | 1/9 | cc | cfc |
| EKSIK-IKI | 5/18 | | cfi |
| EKSIK-UC | 6/18 | | cfu |
| BAKIYE | 4/9 | cb | cfb |
| KUCUK | 5/9 | ck | cfk |
| BUYUKMUCENNEB | 8/9 | cbm | cfbm |

Makamlar

Makamlar (cont.)

