Music Cadence Generator

Music Cadence Generator is a Java-based desktop application for exploring the sonic and structural possibilities of harmonic cadences through transformation.

What It Does

Users select a starting cadence — a progression of chords — and then apply up to three transformations sequentially. Each transformation alters the structure of the cadence based on a musical operation, such as inversion, retrograde, or transposition.

The app displays both the interval matrix and the concrete notes before and after each transformation. It provides real-time MIDI playback using a custom SoundFont, and can export the final result as MusicXML.

Why It Matters

Transformational theory is a powerful lens through which to view music. This app makes abstract musical operations visible and audible, enabling composers and students to investigate the "what ifs" of harmony — what happens when we invert a cadence? Multiply its intervals? Swap rows and columns of its matrix?

By integrating these ideas into an interactive system, the generator fosters intuitive understanding of theoretical ideas, and encourages playful musical discovery.

Getting Started

To compile and run:

```
make jar
java -jar music-cadence-generator.jar
```

Transformations Included

- Identity
- Retrograde
- Inversion
- Transposition (+2)

- Transpose Rows⇄Cols
- Negation (12−x)
- Cycle
- Major→Minor
- Add Ninth / Seventh
- Augmentation / Diminution
- Extend / Duplicate Chords

Credits

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