LCompose: An organic growth model of algorithmic composition

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What is LCompose?

- An interactive algorithmic composition program
- Uses L-Systems to generate melodies
- Written in Java, using the JFugue library, generating MIDI files

What is Algorithmic Composition?

- "composing by means of formalizable methods." – Gerhard Nierhaus, "Algorithmic Composition: Paradigms for Automated Music Generation"

What is an L-System?

- A set of rewrite rules to model organic growth.
- Works on the whole string every generation.
- Example:
  - Symbols: {A, B}
  - Rules: {A->AB, B->A}
  - Seed: A
  - Generation 1: AB
  - Generation 2: ABA
  - Generation 3: ABAAB
  - Generation 4: ABAABABA
  - …and so on.

Why use L-Systems for melodic generation?

- Inherently self-similar
- Non-symmetrical
- Interesting

LCompose – How it works

- Prompts user for an alphabet
  - Defined here as a collection of JFugue tokens
- Prompts user for a set of rules
  - Example rule: Ab3q > G6i F6i D6q
- Prompts user for a seed
  - A single element from the alphabet, ex. G6i
- Iterates through the string, applying rewrites
- Plays the current piece between each iteration, allows for program termination

Example composition

- 7 generations of the following rules:
  - Alphabet: A, Bh, Ci, Di, E, Fi, Gh
  - Rewrites:
    - A > Fi
    - Bh > E Di Fi
    - Ci > A Fi Bh
    - Di > Ci
    - E > Gh
    - Fi > Di Gh Fi
    - Gh > A Gh
  - Seed:A

Live Demo

- Demo
- Any questions?