Introduction

Objective: To create software that facilitates computer-aided composition with:
- Use of statistical models
- Arbitrary input data
- Continuous User Feedback
- Simple User Interface

Background

Music composition traditionally required years of arduous training of music theory. Is it possible to model the creative aspect of composition through algorithms?
- Music Information Retrieval (MIR) -- the study of extracting information from music
- foR cOmputeR assisted COnversation (ROR) -- the practice of having a computer assist humans in composing music or the automation of creativity.
MIRROR combines the field of statistics and music theory to yield a simplified environment for those who lack training.

Implementation

Several modeling techniques were used for the generation of music.

1. Markov Chains
   Stochastic models that use a sequence of events to generate probabilities of following events.

2. Lempel-Ziv
   A dictionary-based algorithm known as Lempel-Ziv 78 (LZ78) was used to generate a dictionary of similar “themes” from a music source.

Software

Python - for program implementation
- Music21 - Python library for abstract musical notation analysis.
- PyQt - Python GUI framework

Future Directions

- Import more DAW features
- Support chord analysis both at note and signal level
- Add an actual tree-style GUI to visualize the choices
- Permit the use of additional models and grammar
- Transform into social media site to allow users to share their pseudo-creative works.

References