

Midi Markov

Musical Mimicry and Mixing in Max • Jared Apillanes

The proposed software aims to interpret pre-recorded midi files and produce live compositions in Max Cycling 74 that mimic and blend the provided samples, accepting live midi input to seed the random process. Initial research into available midi parsers suggests that external pre-processing of the midi files would be best, since Max's midi parsing operates at the file's playback speed, rather than at hardware limitations. Previous endeavors by my peers have touched upon this topic, such as [Richard Chong's](#) hard-coded a first-order Markov Chain, and [Taesung Hwang's](#) use of Markov Chains of chords in Beethoven's Moonlight Sonata. I have also found other non-Max [discussions](#) and [projects](#) on the topic that I can reference to understand how to reduce the Markov chain's domain complexity.

This project, however, aims to produce analyze midi files and produce Markov Chains for pitch, rhythm, velocity, and potentially polyphonic notes. Importing the data into max, the data would then be weighted by the user to produce varying blends of the provided compositions. The produced sequence of notes generated by the tables would be interruptible by a live midi performance, with the last notes of the live performance seeding the state of the Markov chain to continue the piece. These bits of live performance data would also be stored in its own table, which would dynamically update the Markov chain probabilities.

Development would start with parsing the midi data and deciding upon the most reasonable data structures and encodings to use to communicate between Max and the external interpreter. Here I would like to also explore what degree of Markov chain is feasible while avoiding sparsely populated tables. As a placeholder, I would use Max's built-in midi system to skip over building a synthesizer, but I would replace this system with a more customizable synthesizer once I have the rest of the program built. I would also want to learn how to dynamically add and remove controls for the weights in Max, depending upon the number of provided tables. Finally, I would want to explore the live-update and performance aspect of the program, finishing with a polish to the UI.