The Journey

By Alvaro E. Lopez

The Journey is a piece resulting from Alvaro E. Lopez's real-time performance on AMG (Algorithmic Music Generator), a Max patch that generates music adaptively. It illustrates several techniques described in the article "Algorithmic Interactive Music Generation in Videogames."[1]

Music generated by machines always has a human origin. Either as a corpus of human pieces used to train generative models employing statistics, or by authors that directly design their algorithms to produce different instances of a style or aesthetic. In any case, automation in music creativity ends up extending human capabilities by amplifying and potentially diversifying the output. AMG belongs to the algorithmic category, which means that the resulting musical style comes from algorithmic parameter setup instead of statistical reconstruction.

The split video shows the AMG's Max patch in the left and the user interface (UI) in the right. This UI was created for the iPad on the well-known *OSC Touch* app.
The system consists of a two-agent network generating melody and harmony respectively. Agents' parameters, global switches, and variables can be seen as sliders and toggles on the UI and the patch window. Each slider represents a single parameter that modifies one objective musical feature. To control the agents' multi-parameter musical output, two XY pads interpolate among four presets.

AMG allows for a wide variety of music generation settings. A user can fiddle with the parameters to achieve a particular texture and then save it as a preset. Then, by assigning multi-parameter presets —shown as a multi-slider configurations— to the corners of the corresponding XY pad, the user can modify the music stream smoothly by interpolating features.

AMG provides real-time continuous control of tension increase/reduction on music material through time resulting in music development. This is perceived as a relative change in music *complexity*. An increased tension in harmony can be heard, for example, when a V is replaced by V7 or a vii°7, or in rhythm when additional syncopations and/or onsets appear through time. This is achieved by algorithms that change musical generation features linearly and incrementally. Seeded pseudo-random number generators provide self-similarity and also possibilities for sequence alternation.

The melody agent is also the provider of an accent system that governs rhythm. The harmony agent can follow that system or support the main music meter, and all the range in between. It also features a shape parameter that applies a curve in a custom amount to the generated melody line. The harmony agent uses generative grammars to handle the

[1] Alvaro E. Lopez Duarte, "Algorithmic Interactive Music Generation in Videogames," *SoundEffects - An Interdisciplinary Journal of Sound and Sound Experience* 9, no. 1 (January 22, 2020): 38–59, https://doi.org/10.7146/se.v9i1.118245.

harmonic progression and the pitch classes employed by the melody agent. It also communicates the place in the progression to influence other parameters in order to reinforce phrasing. The addition of tension, not only on progression length and chord type but also on pitch class addition/subtraction, offers a full range from basic tonal developments to an atonal music stream.

Other stochastic algorithms adapt to musical trends and offer human-like performance characteristics used in the MIDI output.

The concept of adaptive music generation not only fits into the interactive paradigms of videogames, but also potentially benefits other audiovisual or artistic real-time participatory setups. The intended utility is to responsively and adaptively extend the output material while preserving aesthetics, which suits multi-linear narratives. Nevertheless, in common MIDI automation setups, it also can provide a malleable music generation for video, film, theater, and any other linear developments. AMG's stylistic capabilities are currently determined in general by algorithmic aesthetic human decisions, but can be extended to support feature learning from a preexistent musical corpus.

The Journey can be accessed at:
https://drive.google.com/file/d/1gnVSjmwKjlWGniQ2INj1CSOjYbp5dSvy/view?usp=sharing

Thank you,

Alvaro E. Lopez