Creativity Unleashed:

AI's Potential to Reimagine Music

by Teena Apeles

The term AI can conjure a multitude of feelings for people: curiosity, suspicion, excitement, alarm, frustration, gratitude, surprise. Many of us have no desire to explore it, or perhaps are too intimidated to, as it is something (we think) is so outside of our everyday realities, the stuff of science fiction or simply inhuman.

What's key to this evolution is collaboration. The machines need to learn from someone. And musicians and scientists alike working with AI are showing just how machine learning and machine-generated music is most effective— at least now—by working with us and for us, expanding the possibilities for creativity and, hopefully, making music composition more accessible to people who would never otherwise consider making music.

But more and more of our daily interactions are powered by AI—from algorithms recommending what songs or movies should be added to your playlist to organizing our digital photo albums based on people in them (in short, face-recognition software). As we live and play, our actions are teaching machines how to interact with us. Artists, scientists, and developers all over the world are teaching machines to take music-making to places it hasn't been before. Or is it the other way around? What does AI-assisted mean, anyway, in the creative process?

AI can suggest ways to fill in the gaps in compositions, for instance, by suggesting ways to connect or layer seemingly disparate tracks (or musical styles), add a hook where it's wanted, or even introduce other influences to composition to create something surprising. What could a Bowie session with Beethoven sound like? Bon Jovi and Chopin? Soundcloud has a playlist from San Francisco's OpenAI, creators of MuseNet and Jukebox, which generates songs in that vein. (Elon Musk is one of its co-founders).

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Technology & Creative Collaboration

Berlin-based American artist Holly Herndon's 2019 album, Proto, is touted as an achievement in AI collaboration. She also understands the importance of making the technology more approachable so people don't dismiss it or feel alienated from it, which is why she called her AI Spawn. "We use the metaphor Spawn to kind of describe all of the experiments that we did with machine learning.

It's not one specific piece of software or one algorithm or one even piece of hardware…[it's] a series of experiments," Herndon explains, emphasizing that this technology requires community input to direct it in specific ways. "Spawn really only has access to the information that we provide, very much like a young life. It's a useful metaphor for people to understand it a little bit better than trying to talk about machine-learning architectures."

The "we" she is referring to includes her creative partner, Mat Dryhurst, and their collaborator Jules La Place, an American developer based in Berlin. Another key contributor to Proto was an ensemble of local singers Herndon formed in 2016. Versus choosing them by range or ability to blend, it was "according to a willingness to experiment," she notes. "They helped us train Spawn how to sing…basically any time you're training a neural net or machine-learning system, you need vast amounts of data to train that system on."

Innovate vs. Replicate

While Herndon, like many artists working today, is no stranger to digitally processed vocals, she wasn't interested in just creating a voice that sounds like her or sings in her style. There are many AI projects, like OpenAI's systems, that have gotten attention for their ability to ask an algorithm to play, compose, or sing in the styles of popular artists. "We see composition as this kind of living, breathing art form…we're constantly updating ourselves in our perspectives. I'm a human being and I have all these amazing human sensors that machines don't have. I have all of this cultural context, humans are so advanced in that way and so I wanted to bring all that to the table."

The Artist Reigns Supreme

Many of the teams in last year's AI Song Contest, modeled on the annual Eurovision music competitors but required competitors to use AI systems to compose their entries, learned quickly the limitations of using a single system, struggling to get the results they desired; one team ended up using seven different neural networks to compose their song. One of the judges in the AI Song Contest was Google Brain research scientist Anna Huang, who works on their open-source project Magenta.

She shares, "It was very much the artist had a vision and different kinds of components of the music that they wanted to create, and then they used these AI models as different tools." It's worth noting that she has a Ph.D. in computer science and is also a composer—everyone on the Magenta team are musicians—so she is very invested in creating technology that supports an artist's creativity, to explore possibilities, versus simply replicating or replacing it. "We do think of AI as another tool in a musician's toolbox. And these tools could be ways for you to try out ideas more quickly and try out a wide variety of ideas…to help you break out of your comfort zone a little bit," Huang says, referring to standalone apps and free plugins (Continue, Groove, Generate, Drumify, and Interpolate) the Magenta team has built for the Ableton Live software, digital audio workstation musicians use for mixing and composing.

"If you're composing a melody, [the plugin] allows you to generate some variations if you're stuck. It can also do interpolations. If you have two ideas and you want to figure out what are all the ideas in between and what are all the ways to get from this one place to another place, then it can generate a bunch of the coordinates for you." It even can smooth out a melody.

Does this mean artists will turn to AI technology more versus collaborating with other musicians? Based on her personal experience, composing music is still very much about human interaction: "It makes me want to make sure we have more…it kind of provides an opportunity to really reach out and collaborate more. A lot of times musicians kind of iterate with each other. Like I

made this track and then I send it to you, and then you make a layer on top of my track, or maybe multiple different tracks on top of my track, and go back and forth. Now there are more and more tools that allow you to do this in real-time."

And in response to people who might be wary of introducing AI into their creative process, she wants them to think of these tools as "building blocks," not something mysterious or things that will replace human ingenuity. Huang hopes that these AI tools may also convert music listeners to be composers. "For my own work, I focused a little bit more on kind of building tools that allow music to be more interactive so that we're not just kind of passively listening to the music," she shares, "that more people can kind of feel empowered to be creative and to be playful with the music."

Isao Matsushita, composer and vice president of the Tokyo University of the Arts, which sponsored the 2017 "Mai Hi Ten Yu" concert featuring dancer Kaji Moriyama and a Yamaha AI system that translated his movements into music on a player piano, may agree that such tools allow for more participation by individuals from different spheres—and that we should welcome it: "Art must change in tandem with the changing times," he said in a press release about the project, "This style of creating musical compositions is challenging, but these initiatives have opened up new possibilities and given us even more powerful inspiration than we have experienced in the past."