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Interview: Nao Tokui in Conversation with Stephen Roddy

Stephen Roddy

Abstract: Nao Tokui is an artist, researcher, and DJ who has been finding interesting new ways of integrating artificial intelligence and machine learning (AI/ML) techniques into his eclectic body of work since 2015. Stephen Roddy talked with Nao about his approach to AI in his own work and where he sees the relationship between AI and musical creativity going in the future.

Keywords: AI, Music, Creativity Nao Tokui, Sound

Introduction

Nao Tokui is an artist, researcher, and DJ who has been finding interesting new ways of integrating artificial intelligence and machine learning (AI/ML) techniques into his eclectic body of work since 2015. His first book on AI and creativity won the Okawa Publishing Award 2021, and his works have been exhibited at New York MoMA, Barbican Centre (London), InterCommunication Center (Tokyo), and more. I first encountered Nao's work when recordings of his performance of "Emergent Rhythm" at MUTEK.JP 2022 appeared online in March of 2023 and was compelled to dig more deeply into his work. His approach to AI/ML technologies and the novel aesthetic worlds he conjures with them lend his work a unique voice that sets it apart from contemporaneous projects. Nao's pieces are not technical demos for a given AI/ML technique, but rather fully realized explorations of potential sonic and visual realities that could only exist through the mediation of AI/ML technologies.

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Alongside his creative practice, Nao is the founder of Qosmo, an AI creative studio, and Neutone, an AI audio tech company. Neutone produces AI tools that slot neatly into music production and performance workflows, making AI/ML accessible for artists and producers who want to play and experiment with it. In his work, Nao explores the potential expansion of human creativity through the use of AI. He is well suited to this, having received his PhD from the University of Tokyo for his human-computer interaction and AI research. I sat down with Nao to chat about his approach to AI in his own work and where he sees the relationship between AI and musical creativity going in the future.

Stephen Roddy: Your 2022 EP *Dawn Patrol* covers a wide range of machine-learning approaches and architectures, from GANs (generative adversarial networks) to autoencoders. One track in particular, "Vox YT-Populi" uses a very interesting micro sampling technique. Can you tell us a little about that track?

Nao Tokui: Okay, so the basic idea was very simple, I wanted to use many, many samples—I mean, as many samples as possible. So I used a convolutional neural network to classify samples, voice samples that I collected from YouTube. The convolutional neural network was used to classify voice samples from my own custom dataset of YouTube videos and sound.

I used another convolutional neural network to detect the basic pitch of those samples. And so I could play with my keyboard and play back those samples in different pitches. So yeah, that was the basic idea behind the project. And before working on this track, I made a website called Neural Beatbox. And I used a similar technique to create an instant drum kit out of

your own voice. So it's like an AI human beatbox generator. I published that website, and I think it's still available at neuralbeatbox.net.

SR: Yes. There's a real performative element to the work you do and to projects like Neural Beatbox.

NT: Yeah, it's a fun project. I made this website back in the middle of the COVID pandemic, so everybody was stuck in their houses. I wanted to make some kind of collaborative platform for people to enjoy together with the help of AI. I made this website so you can create a beatbox session with your friends.

I was super interested in the "happy accidents." Obviously, this convolution neural network-based sample classification is not perfect; sometimes it misclassifies samples and pitches, but this kind of happy accident gives interesting ideas and new textures, new melodies, or new rhythm patterns, so that part is very interesting to me.

SR: On the subject of happy accidents, your audiovisual DJ performance at the MUTEK Festival last year, "Emergent Rhythms," involved the generation of audio and visuals in real time, which you then had to integrate into the piece live in the moment. That must have been quite an intense experience.

NT: I think I'm too easily bored. I need constant inspiration, otherwise I get bored on stage. So I try to find a good balance between control and a kind of chaos. I want to be in between chaos and control, that's my theme in a way.

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SR: You've also found a way of making AI tools interesting to play with for other musicians and artists. Your Neutone VST fits into standard DAW-based music production and performance workflows and doesn't require advanced Python or machine learning skills to use. Can you talk a bit about the idea behind Neutone?

NT: My basic idea is to make AI as accessible as possible, and also useable. So I think it's important for artists to misuse tools, as they wish. If tools are physical it's easy to misuse them. For example, with the turntable, you can put your fingers on the turntable and scratch it, right? But when it comes to software, and especially AI, it's basically a black box, and you cannot misuse the AI, unless you are an AI engineer or AI researcher. So I wanted to change that situation. And again, I wanted to make it as accessible as possible. I think, when you look back at the history of music and musical instruments, there are so many great tools that were misused by musicians, like the 808 drum machine, turntables, or even the sampler.

SR: Did the idea of intentional "misuse" of AI tools come from examining how sound artists and musicians have historically bent technology to new artistic purposes? Or from working with AI and trying to find ways of steering and hacking it to your own ends?

NT: That's a good question. I haven't thought about that. You know, I don't play any musical instruments. So I had to find my own voice and my own music through hacking and programming and stuff like that. So it was so natural for me to think about this concept of misuse.

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SR: Public perception of AI has been changed and shaped by massive tech companies like OpenAI and Google and tools like Chat GPT and MusicLM. How do you think this has shaped the expectations audiences bring to your work and how they understand what you do?

NT: That's also a great question. Huh? Yeah, so when I started my initial AI DJ project, it was in 2015. So it was challenging for me to explain the concept of AI and why I was doing that particular performance. Now people are starting to understand why I'm interested in AI and creativity. People have started to see the potential of AI and the application of AI in their own lives. So, for the audience, it's now obvious, as more artists start using AI. But I sometimes feel different kinds of expectations from the audience. So, basically, if I say I use AI, people think I am trying to automate the process of performance, and I'm trying to make a performance perfect. If I use AI, it means the performance should be perfect. I am always struggling to tell people that I use AI to introduce some kind of imperfectness or unexpectedness or even alienness. But it's still an alien concept to people.

SR: Alongside shaping public perception, the manner in which large technology and entertainment companies have been developing and applying AI technologies has raised a lot of ethical questions. How do you navigate ethically in that context?

NT: It's tricky and it's obviously a big challenge for me and my company, Qosmo, because I have to survive and pay my employees. I try to be honest. I just want to make novel music, and I want to help other artists to create new and interesting music. I don't see the future represented in Open AI or Google Vision, I don't see that kind of scenario happening.

I just try to kind of convey my own message to the audience, through my musical performance. I have written about this in my book on AI and creativity, and I've been working on the English version. So once it's ready, I want to send the book to you but yeah, that's how I navigate through this challenging landscape.

SR: For all of the reasons we have just discussed, the narrative around what AI *is* is heavily polarized. If you could wrestle some control back from these massive companies, what kind of story would you like to tell about AI and its potential for the creative arts?

NT: People think AI is all about automation, right? You can use GPT to automate mundane tasks. You can automate the process of painting with Stable Diffusion or Dall-E. I want to change that kind of narrative. So AI can be a new paintbrush, or a new camera, or a new piano. The piano doesn't automate the process of making music, but it helps musicians and composers to compose music. So yeah, I want the narrative around AI to lean that way.

SR: As we discussed, your recent book provides an in-depth exploration of the interaction between AI and creativity. Drawing on your writing there, and in the broadest possible terms: 10 years down the road from now, how do you think AI will have shaped our ideas about creativity, especially in a musical context?

NT: I think AI will extend the concept of creativity itself. I think AI will make it easy for somebody to enter music and music-making practices. So if you are a beginner, you can still make music that's good with some help from AI. Also, if you're an expert, then you can explore new sounds, new soundscapes, or new instruments with AI. In that sense, I think AI

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will expand and extend the notion of what creativity is. Besides that, the question is far too big.