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2022 CIRMMT Inter-centre Research Exchange Funding Report

I travelled to Vancouver, British Columbia to participate in a one-month residency hosted by Prof. Philippe Pasquier at the Metacreation Lab for Creative AI at the School for Interactive Arts and Technology (SIAT) at Simon Fraser University's Surrey Campus from April 18 to May 16, 2022. I was welcomed into the lab and given access keys and a workspace during the residency, including access to audio-video recording gear and a recording studio.

I engaged in weekly lab meetings with Philippe and graduate students from the lab. My research partner for the *Etu{d,b}e* project, Vincent Cusson, was unable to attend the residency in person, but Philippe welcomed Vincent to participate via Zoom. Vincent and I presented our research to the lab, introduced our work and our residency goals, while taking questions from students and Philippe. Lab members presented their research during subsequent meetings, followed by questions and discussion, allowing us to get to know their research directions and to dialogue about shared interests. During one meeting Philippe presented new ethics policies in AI research regarding copyright infringement concerns. Although our research is not solidly within the AI domain, the discussion of ethics and copyright issues within the larger AI field was nonetheless interesting and also related to improvisation and music generation aspects of our project.

Like many SIAT labs, the Metacreation Lab is interdisciplinary, with graduate students working on AI and generative technologies in fields such as sound, visuals, architecture, and virtual reality. Coming from a primarily sound-oriented institution I was able to learn from various approaches to these technologies and to make connections with artist-researchers in other mediums. In addition, I visited Prof. Ron Wakary's Everyday Design Studio and Dr. William Odom's newly funded lab focused on slow interaction and digital fabrication of technologies for the internet of things, meeting with the professors, other grad students, and touring the facilities.

I was involved in ongoing projects of the Metacreation lab, including beta testing new generative AI technologies with industry partners. I tested the product during the first two weeks of the residency and gave feedback to the graduate students running the study. This was my first experience with an industry-academia partnership and I found the process fascinating and also pertinent to our work developing interactive tools for the eTube. The evaluation questionnaires for the generative AI tool contained questions relating to the user's perceived agency and ownership of the final product when using the tool. These questionnaires outlined useful strategies for providing feedback and evaluation in human-computer communication, which will contribute to new directions for evaluation strategies of the Etu{d,b}e project.

One of the main goals of this residency was to work with generative technologies being developed at the Metacreation Lab and to improvise saxophone music and to adapt our eTube framework. *Musical Agent based on Self-Organizing Maps* (MASOM) and *Spire Muse* were the two projects we were especially interested in. Vincent and I worked directly with Notto Thelle who has been developing Spire Muse during his PhD. This software utilizes corpus analysis of audio files which are then used in improvised contexts with live musicians expanding on the *MASOM* framework, and adapting it for live performances with human improvisors. Part of our

research involves performing with and adapting different performance environments, which has been a significant part of our Student Award research throughout 2021–22. This was an excellent opportunity to explore these new technologies in a naive way through trial and error, but also to speak in-depth with the designers, to glean a deeper knowledge of the specific structures designed in the patch. *Spire Muse* was particularly interesting for us for its use of a feedback mechanism to inform the electronics of the performer's preferences in real time. Although this feedback mechanism was not fully functioning, we spoke to Notto his approach and implementation of this function, helping us to learn more about this specific approach to performer-computer communication and how we might implement these structures into our own system.

There is a strong presence of academics and artists in Vancouver who work with generative technologies, including Prof. Arne Eugenfeldt. Arne was kind enough to meet me in during the residency to speak about his long-running artistic and academic project called *Musebots*. Musebots are improvising systems which may be used as standalone performers or linked in more complex systems between multiple computers. In particular, I was interested in Arne's process for curating the musebot's material, and the way that he programmed the musebots to communicate amongst themselves, allowing each bot to foreshadow their musical ideas to the other bots, something impossible for humans in realtime. We also spoke about potential future collaborations adapting the *Musebots* with elements of the *Etu{d,b}e* project.

I attended two Vancouver New Music (VNM) shows where I met with members of the Vancouver new music community, including VNM organizing members, sharing with them the *Etu{d,b}e* project and research. I also attended a Mixtophonics concert which involved artists in the Vancouver improvisation scene and I met specifically with improvisors who were working with electronic media in improvised contexts outside of academia.

Expanding on our work during the residency, Vincent and I will continue to work with Philippe on a full paper which we anticipate submitting for conferences such as New Interfaces for Musical Expression (NIME) in 2023. During the final days of the residency, I filmed audio and video excerpts improvising with the eTube and saxophone using our *Etu{d,b}e* memories as a corpus with *Spire Muse*. Vincent and I will edit the audio and video material, and will create a webpage outlining the work we completed on *Spire Muse* during the residency. We will share these videos with the Metacreation Lab's social media accounts and CIRMMT's mailing list to promote the ongoing collaboration. Following the residency, Vincent and I will continue working with Notto and *Spire Muse* on updates to the patch, further adapting the work for eTube or saxophone.

Thank you to Prof. Philippe Pasquier and the Metacreation Lab for hosting me for this one-month exchange, and to SFU administrators Tiffany Taylor and Hannah Dodson for their help accessing resources. Thank you to CIRMMT for supporting this research exchange, to my CIRMMT sponsors Guillaume Bourgogne and Robert Hasegawa and to my director of research Marie-Chantal Leclair. A special thank you to SFU graduate student Keon Leigh for showing me around the lab and for their help with logistics and administration during the residency.