

AIMC 2024 (09/09 - 11/09)

Mosaïque - Concatenative Synthesis Instrument for the Practicing Musicians

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Description

Workshop Overview: Corpus-based concatenative synthesis (CBCS) stands as a prominent technique in electroacoustic composition[1][2][3], offering a unique approach to sound manipulation and synthesis. Developed over the past two decades, CBCS involves the analysis and organization of sound samples, or corpora, based on their timbral characteristics. This technique enables composers to navigate and manipulate sound in a non-linear fashion [4][5], offering a rich palette of sonic possibilities. While CBCS has traditionally required programming expertise, recent advancements [6] have sought to democratize access to this technique, making it more accessible to non-coding musicians.

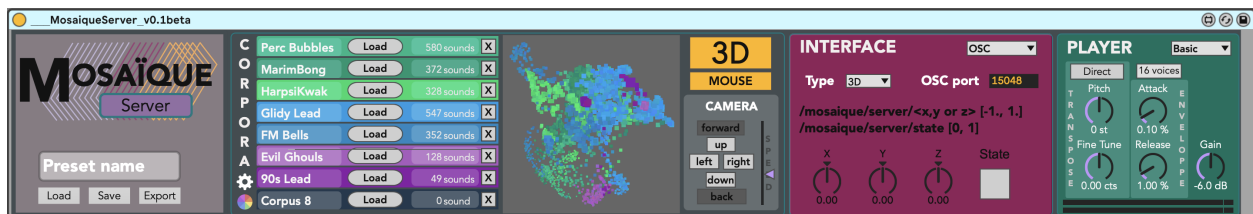


Figure 1
Graphical interface of Mosaïque (Max for Live version)

This workshop proposes to introduces Mosaïque (Figure 1), a software instrument aiming to address this barrier by offering a user-friendly interface and simplified workflow and enabling musicians to explore new sonic territories and experiment with AI-driven sound generation. It presents a unique interpretation of CBCS through its software design. While not the pioneer in offering 3D visualization of corpora [7][8], Mosaïque distinguishes itself by providing a comprehensive 3D environment (Figure 2) for visualizing audio corpora, alongside MIDI, OSC, and algorithmic navigation tools. Developed with a strong emphasis on accessibility and user-friendly operation, Mosaïque simplifies the complex processes inherent in CBCS, including audio segmentation, importation, analysis, plotting, and playback. Its intuitive interface incorporates playback parameters and navigation settings, ensuring ease of use for musicians. Available as both a standalone application and a Max for Live device compatible with the Ableton Live composition environment, Mosaïque caters to users on both Windows and MacOS platforms.

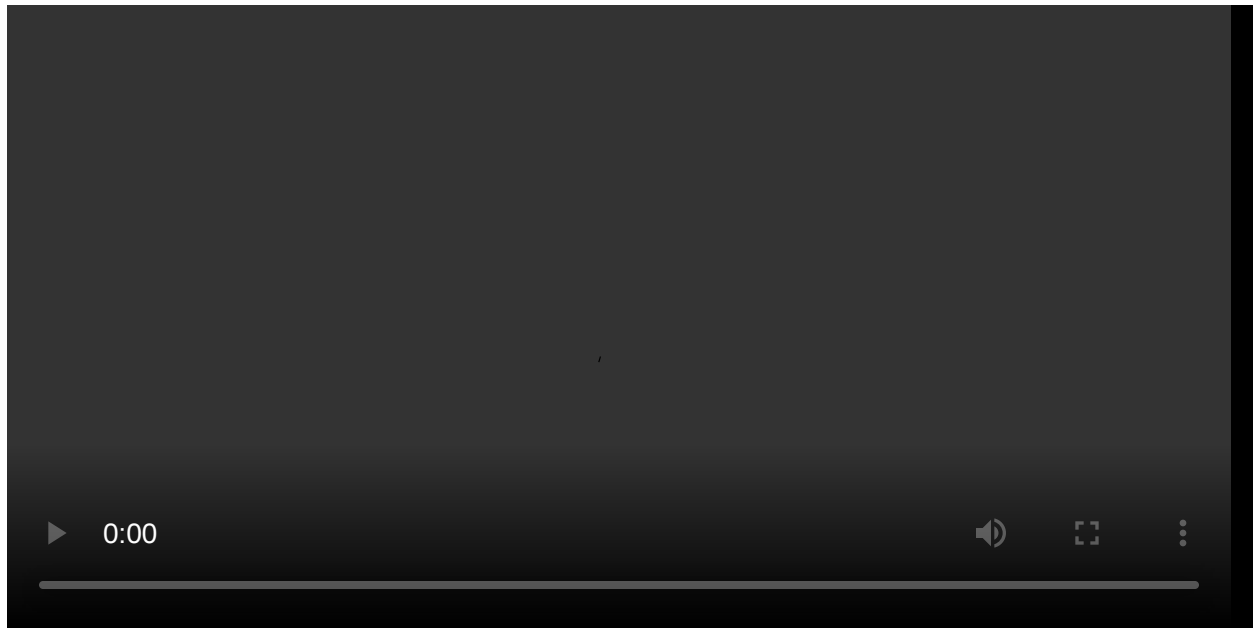


Figure 2
Example of corpora navigation with Mosaïque's 3D engine

Workshop Structure:

- **Introduction (30 minutes):** Participants will delve into the principles and applications of concatenative synthesis, gaining an understanding of its general concepts, sonic characteristics and creative possibilities. The session will outline the workshop objectives and provide context for the subsequent activities.
- **Getting started with Mosaïque (30 minutes):** Attendees will then download and install Mosaïque, become familiar with its intuitive interface, and load a corpus from the provided collections. Guided tutorials will introduce basic sound manipulation, empowering participants to create their first sound creations with CBCS.
- **Personal exploration of the instrument (30 minutes):** Once Mosaïque has been installed and presented, participants will have time to intuitively explore the sonic possibilities of the instrument and ask questions
- **Designing corpora (30 minutes):** The focus will shift to custom sound corpus creation, a crucial aspect of CBCS exploration. Participants will learn the process of collecting, segmenting, analyzing, and plotting sound samples, fostering a deeper understanding of the technique's underlying principles.
- **Controlling the sound generation (1 hour):** In an informal last session, we will explore techniques for navigating and manipulating sound corpora using Mosaïque's 3D engine. Participants will also explore the expressive possibilities of MIDI and OSC implementation, experimenting with composition techniques such as layering, morphing, and sequencing gestures in the timbre-space[\[9\]\[5\]](#).
The workshop will conclude with a collaborative discussion, providing participants with the opportunity to share their experiences, insights, and creative outcomes. Attendees will explore resources for further learning and potential collaboration opportunities within the vibrant Mosaïque community.

Learning Objectives:

- Learn about a new sound synthesis technique and be able to use it in the composition and performance context.
- Acquire and prepare datasets for use in Mosaïque, gaining proficiency in sound corpus creation and analysis.
- Understand machine-listening concepts and their application in sound generation, exploring the intersection of music and AI.
- Explore dimension reduction techniques for visualizing audio corpora in 3D space, enabling intuitive navigation and creative exploration.
- Utilize prediction tools and decisional trees for navigating sound corpora, enhancing control and expression in composition and performance.
- Engage in collaborative learning and knowledge sharing within the digital music community, fostering a culture of innovation and experimentation.

Relevance and Impact: By making CBCS accessible through Mosaïque, this workshop empowers musicians to transcend traditional boundaries and explore new sonic frontiers. Participants will gain hands-on experience with cutting-edge sound synthesis techniques, expanding their creative toolkit and broadening their artistic horizons. Additionally, the workshop fosters collaboration and community building, creating opportunities for ongoing learning, growth, and exploration in the ever-evolving field of digital music.

Target Audience: The workshop is designed for musicians of all levels, whether participants are seasoned composer looking to expand their sonic palette or curious novices eager to explore new musical territories, this workshop offers something for everyone. It offers practicing digital musicians a valuable opportunity to explore the creative potential of CBCS and AI-driven sound generation. Through hands-on exploration of Mosaïque's approach to corpus-based concatenative synthesis (CBCS), participants will acquire insights into using AI techniques to enrich their musical practice. Moreover, this workshop is an opportunity for AIMC to engage with the musical community of Oxford, facilitating dialogue and collaboration between researchers, composers, and performers at the intersection of AI and music creation.

Larger Goal: At its core, the *Mosaïque* project aims to democratize access to machine learning techniques, promote pedagogical approaches of learning through creation, and foster collaboration and innovation within the digital music community. By empowering musicians to harness the creative potential of CBCS, Mosaïque seeks to inspire a new generation of artists and push the boundaries of sonic exploration.

Short Description

Hands-on workshop for digital musicians to discover corpus-based concatenative synthesis (CBCS) with software instrument *Mosaïque*. This workshop provides an in-depth examination of sound corpus creation & navigation, composition techniques, and the integration of artificial intelligence in music. Through practical exercises and guided instruction, participants will explore the nuanced intricacies of CBCS, gaining valuable insights into its application within modern music composition practices.

Organizers

Dominic Thibault, Université de Montréal <dominic.thibault@umontreal.ca>

Dominic Thibault is an electronic musician, composer, improviser, coder, teacher, member of the duo Tout Croche, and co-director of the label The Silent Howl. His music blends concrete music, noise, minimal techno, and soundscapes.

Dominic is an assistant professor at the Faculty of Music, Université de Montréal, where he teaches composition, music computing, and studio techniques at the undergraduate level. He also supervises graduate students in sound creation and composition. He is the co-director of the [Laboratoire formes · ondes](#) Laboratory and an active member of [CIRMMT](#) and [OICRM](#).

Dominic is interested in interaction systems in the field of digital music, particularly human-machine interactions and their impact on musical creation. His research-creation takes the form of electroacoustic compositions, audiovisual performances, musical software, and noisy improvisations. His teaching focuses on music computing and studio creativity. His music has been released by record labels such as The Silent Howl, Entr'acte, Kohlenstoff, and Mikro Climat. His research is funded by the Fonds de recherche du Québec - Société et culture, OICRM, CIRMMT and the Conseil des arts et lettres du Québec.

Preferred Length of Workshop

Half-day (3 hours)

Technical and Space Requirements

For this workshop, the presenter would require a hall with :

- A projector
- Stereo loudspeakers with 1/8" jack
- Tables and chairs for participants
- AC outlets accessible for participants

Participants should have a computer and a pair of headphones. In case some participants could not provide a computer and wished to participate, it would be ideal if AIMC organizers could reserve a few desktop or laptop computers.

Mosaïque can either be used as a Max for Live device inside of Ableton Live or as a standalone application. It is compatible with both Windows and MacOS.

Workshop is presented in presence.

Links to Supporting Media (optional)

<https://mosaïque.musique.umontreal.ca/>

<https://github.com/LFO-lab/Mosaïque>

Ethics Statement

- Mosaïque is a free and open source software.
- Music and sounds produced by the participants during this workshop are their sole property.
- The research involved in this workshop did not involve human participants. Therefore, no ethics certificate was needed.
- The Mosaïque project is funded by the Fonds de recherche du Québec - Société et culture (FRQSC) and Observatoire interdisciplinaire de création et de recherche en musique (OICRM)
- The proposed workshop poses no conflict of interest.

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