Live Coding with Crowdsourced Sounds and A Virtual Agent Companion

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ABSTRACT

This performance combines machine learning algorithms with music information retrieval techniques to retrieve crowdsourced sounds from the online database Freesound.org, which results in a sound-based music style. The use of a virtual companion complements a human live coder in her/his practice. The core themes of legibility, agency and negotiability in performance are researched through the collaboration between the human live coder, the virtual agent and the audience.

1. PROJECT DESCRIPTION

The project *MIRLCAuto: A Virtual Agent for Music Information Retrieval in Live Coding* (MIRLCa) is two-fold. It aims to creatively explore: (1) the use of large collections of sound data in live coding performance through the use of machine learning (ML) and music information retrieval (MIR) algorithms; and (2) the use of a virtual agent who can complement a human live coder in her/his practice.

MIRLCa [4] is a self-built SuperCollider extension and a follow-up of the also self-built SuperCollider extension MIRLC [2, 3]. The system combines ML algorithms with MIR techniques to retrieve crowdsourced sounds from the online database Freesound [1], which results in a sound-based music style. In this performance, the live coder will explore the online database by only retrieving sounds predicted as "good" sounds when using the retrieval methods from the live coding system as shown in Figure 1. A binary classifier based on a multilayer perceptron (MLP) neural network has been used for sound prediction.

Legibility, agency and negotiability in performance are the core themes of the project. The themes are explored through the collaboration between the human live coder, the virtual agent, and the audience in a live coding context.

2. DURATION AND FORMAT

The approximate duration of this performance is 15 minutes. It is also possible a shorter or longer duration. The format can be either online streaming or on-site.

Figure 1: A screenshot of MIRLCa.

3. DOCUMENTATION

In the following link, you can find video documentation of similar performances using the MIRLCa tool: https://mirlca.dmu.ac.uk/concerts

More information about the project is available on the project's website: https://mirlca.dmu.ac.uk

4. TECHNICAL REQUIREMENTS

In the case of online delivery, the performer will be streaming a live coding session using the live streaming platform OBS.[1] In the case of delivering the performance on-site, the performer will need:

- Two output lines, balanced jack or XLR.
- Small table (approx. 70 cm x 100 cm) for equipment.
- Wi-Fi Internet access for the performer.
- Wi-Fi Internet access for the audience.
- A projector (with HDMI connection).

5. AUTHOR BIO

Anna Xambó is a Senior Lecturer in Music and Audio Technology at De Montfort University and an experimental electronic music producer. Her research and practice focus on new interfaces for music performance looking at live coding, collaborative and participatory music systems, and multichannel spatialisation. To date, she has released

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[1]https://obsproject.com

three solo recordings: *init* (2010, Carpal Tunnel), *On the Go* (2013, Carpal Tunnel) and *H2RI* (2018, pan y rosas). Her solo and group performances have been presented internationally in Denmark, Germany, Norway, Spain, Sweden, UK and USA, including *Hyperconnected Action Painting* (WAC 2017), *Imaginary Berlin* (WAC 2018), and *Trondheim EMP Repository processing* (WAC 2019).

6. ACKNOWLEDGMENTS

7. REFERENCES

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