Floop Jam

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ABSTRACT

This submission proposes a web-based collaborative performance using Floop, a loop jamming system based on the Freesound database. The performers meet in a virtual room with a collection of loops that have been matched for rhythm, and organized according to timbre similarity. Their exploration develops as a DJ session, which is visible to the audience through the projected interface.

1. PROJECT DESCRIPTION

Floop is an online jamming system based on the Freesound online database [1]. It was first presented at the first Web Audio Conference [3]. The system allows browsing hundreds of loops that are played in sync. The core of the system is an index built using Foote's beat spectrum [2], which allows detecting repetitive patterns without relying on common assumptions about musical rhythm. Sounds with salient repetitions are classified into bins of a histogram of repetitive periods. Choosing one bin of the histogram selects a collection of sounds that repeat with the same loop period. The resulting sounds are organized into a neighborhood graph based on timbre similarity. A graph layout algorithm is then used to position the sound thumbnails in a 2D plane. A screenshot of the interface is shown in Figure 1.

In 2020 a multi-user capability was added which allows its use for collective jamming. When several users load the same collection, the sounds triggered by each user are triggered in each other's browser. Also, a pre-listening feature has been added so one can listen to sounds before triggering them for everyone else. The system can thus be used as a shared jamming space. For public performance, a separate computer is used as the "host", which is simply another user that does not trigger any sound. The sound and interface of the host are what the audience hears and sees.

2. TECHNICAL REQUIREMENTS

The performance can work either in a distributed or a local setting. The system has been used in a distributed setting in the Network Music Festival 2020[1]. In this case, a streaming server is needed. The video and sound of the host computer are streamed via OBS studio[2], which supports the most common streaming platforms. For the local case, the requirements are a projector and PA, wired or stable wireless internet and space for three performers and four laptops.

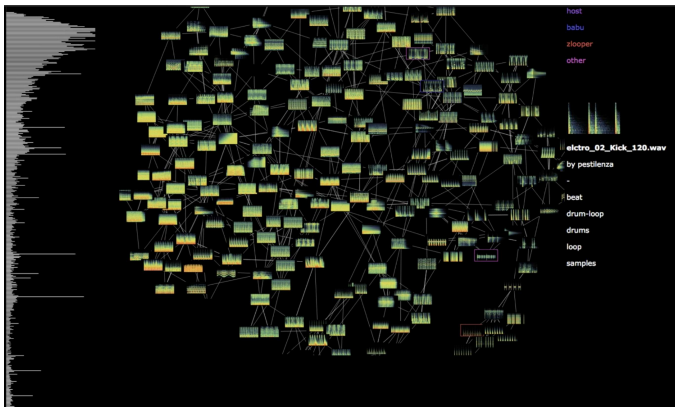

Figure 1: Screenshot of the Floop interface

3. ACKNOWLEDGMENTS

This research has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 725899).

4. REFERENCES

[1] F. Font, G. Roma, and X. Serra. Freesound technical demo. In *Proceedings of the 21st ACM international conference on Multimedia*, 2013.

[2] J. Foote and S. Uchihashi. The beat spectrum: A new approach to rhythm analysis. In *Proceedings of the IEEE International Conference on Multimedia and Expo, 2001.*, 2001.

[3] G. Roma and X. Serra. Music performance by discovering community loops. In *Proceedings of the 1st Web Audio Conference*, Paris, 2015.

Web Audio Conference WAC-2021, July 5–7, 2021, Barcelona, Spain.

[1] https://networkmusicfestival.org
[2] https://obsproject.com/