

# Audiovisual Programming in Live Performance

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## ABSTRACT

In this workshop, participants will explore a variety of live coding technologies (including Gibber, Hydra, and the Force, among others) and discuss different approaches to multimodal programming / audiovisual synchronization with web technologies.

## 1. WORKSHOP NOTES

In many ways, the browser is an ideal vehicle for audiovisual performance. In addition to affordances for low-level audio programming, it also features a wide variety of approaches for graphics programming, including its `canvas` element, the Scalable Vector Graphics (SVG) format, and WebGL. These are all conveniently united under a single programming language, JavaScript, that is also easily targetable by domain-specific languages for multimedia performances.

Given these powerful features, it is natural to think about combining these technologies to create rich audiovisual experiences. This workshop will explore techniques for doing so, ranging from how to manage the analysis node of the Web Audio API to drive graphical parameters, to examining different techniques that various visual/audiovisual environments use to synchronize and map between the audio and visual domains. We'll specifically be looking at browser-based systems for live coding performance, including (but not limited to) The Force [1], `marching.js` [2], Hydra<sup>1</sup>, and Gibber [3].

Along the way we'll also discuss the aesthetics of audiovisual compositions and watch examples of how audiovisual artists have dealt with the topic of multimodal mappings, ranging from impressionistic approaches to more literal techniques such as audification. Ideally, workshop participants will leave with a new set of tools to explore, some background knowledge on the techniques used to create expressive mappings, and having discussed interesting works exploring audiovisual composition and performance.

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<sup>1</sup><http://hydra-editor.glitch.me/>



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## 2. FACILITATOR BIO

I am an Assistant Professor in the Department of Computer Science at the Worcester Polytechnic Institute, with an affiliation in the Interactive Media and Game Development program. I research human-centered computing in digital arts practice, and am the lead designer and developer of Gibber, an open-source, creative coding environment for the browser. I have given live coding performance using Gibber throughout North America, Europe, and Asia.

## 3. REFERENCES

- [1] S. Lawson and R. R. Smith. The dark side. In *Centro Mexicano para la Música y las Artes Sonoras (Mexico): Proceedings of the Third International Conference on Live Coding*, 2017.
- [2] C. Roberts. Live Coding Ray Marchers with `Marching.js`. In *Proceedings of the Fourth International Conference on Live Coding*, 2019.
- [3] C. Roberts, M. Wright, J. Kuchera-Morin, and T. Höllerer. Gibber: Abstractions for creative multimedia programming. In *Proceedings of the 22nd ACM international conference on Multimedia*, pages 67–76. ACM, 2014.