

# Hyperconnected Action Painting

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## ABSTRACT

This performance invites the audience to participate in an immersive experience using their mobile devices. The aim is at capturing their actions on a digital painting inspired by Jackson Pollock's action painting technique. The audience is connected to a wireless network and a Web Audio application that recognizes a number of gestures through the mobile accelerometer sensor, which trigger different sounds. Gestures will be recognized and mapped to a digital canvas. A set of loudspeakers will complement the audience's actions with ambient sounds. The performance explores audio spatialization using both loudspeakers and mobile phone speakers, that combined with the digital painting provides an immersive audiovisual experience. The final digital canvas will be available online as a memory of the performance.

## 1. PROGRAM NOTES

Participatory performances are becoming more common since the advent of Web Audio. The uniqueness of these collective experiences tends to be ephemeral. This performance invites the audience to participate in an immersive experience using their mobile devices. The aim is at capturing their actions on a digital painting inspired by Jackson Pollock's action painting technique. The audience is connected to a wireless network and a web application that recognizes a number of gestures through the mobile accelerometer sensor, which trigger different jazz-related audio samples influenced by a post-jazz aesthetics. The piece is divided into four sections distinguished by timbre, density, and rhythm. Gestures will be recognized and mapped to a digital canvas. A set of loudspeakers will complement the audience's actions with ambient sounds. The performance explores audio spatialization using both loudspeakers and mobile phone speakers, that combined with the digital painting provides an immersive audiovisual experience. The final digital canvas will be available online as a memory of the performance.

## 2. PROJECT DESCRIPTION

The application is implemented on top of Handwaving [1], a framework system that recognizes accelerometer gestures,



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Web Audio Conference WAC-2017, August 21–23, 2017, London, UK.

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such as left-right, up-down, convex or concave gestures. The audiovisual application uses some third-party JavaScript libraries, such as *Flocking.js*<sup>1</sup> for the sound engine, *P5.js*<sup>2</sup> for the visual engine, and *Express.js*<sup>3</sup> to handle web server tasks and communicate between the two engines. The audio samples have been selected from *Freesound.org*.<sup>4</sup>

## 3. TECHNICAL REQUIREMENTS

The audiovisual piece relies on the audience's smartphones combined with loudspeakers. It is best delivered using a multichannel system of four or eight speakers, yet it can also be adapted to a stereo PA system. The digital canvas will be projected.

## 4. DOCUMENTATION

- The material related to this performance, including the digital canvas, can be found here:  
<http://crowdj.net/hap>
- The source code of the application can be found here:  
<https://github.com/axambo/hap>

## 5. ARTISTS BIOS

Anna Xambó is currently a Postdoctoral Fellow at the Georgia Tech's Center for Music Technology (GTCMT) and Digital Media Program, as well as a composer, performer, and producer of experimental electronic music. She has performed in Spain, Denmark, UK and USA. Her practice includes live coding, multichannel spatialization, tangible music and participatory music experiences. Xambó holds a MSc specializing in HCI and music technology from Universitat Pompeu Fabra (Barcelona, Spain), and completed her PhD on collaborative music computing at the Open University (UK). Her research has been published in international conferences (NIME, CHI, TEI) and journals (ToCHI, IwC). She is co-founder of the online records label Carpal Tunnel and co-founder of Women in Music Tech at GTCMT.

Gerard Roma is currently a Postdoctoral Fellow at Georgia Tech working on networked interactive music systems. He previously worked as a Research Fellow at the University of Surrey (UK) working on audio source separation. His PhD at Universitat Pompeu Fabra focused on algorithms

<sup>1</sup><http://flockingjs.org> (accessed April 14, 2017).

<sup>2</sup><http://p5js.org> (accessed April 14, 2017).

<sup>3</sup><http://expressjs.com> (accessed April 14, 2017).

<sup>4</sup><http://www.freesound.org> (accessed April 14, 2017).

and representations for supporting online music creation. Prior to that, he obtained a MSc in information and media technologies (UPF, Barcelona) and a degree in philosophy (UAB, Barcelona). He performs and releases electronic music under different aliases (0001, LRAD, 9v, pulso), frequently through the label Carpal Tunnel, which he has co-founded.

## 6. REFERENCES

- [1] G. Roma, A. Xambó, and J. Freeman. Handwaving: Gesture Recognition for Participatory Mobile Music. In *Proceedings of the 12th Audio Mostly Conference: A Conference on Interaction with Sound (AM '17)*. ACM, 2017.