S.A.R.A. – Synesthetic Augmented Reality Application

Margarita Benitez
Fashion Technologist + Assistant Professor at The Fashion School
Kent State University
mbenitez@kent.edu

Markus Vogl
Assistant Professor at Myers School of Art
University of Akron
mvv@uakron.edu

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ISWC'14 Adjunct, September 13 - 17, 2014, Seattle, WA, USA
ACM 978-1-4503-3048-0/14/09.
http://dx.doi.org/10.1145/2641248.2641277

Abstract
S.A.R.A. – (synesthetic augmented reality application) is an App exploring the potential of using a mobile device as a unique and wearable musical interface.

Author Keywords
Synesthetic mitigation music app; transformative interfaces; open source artistic tools; interactive dance and technology, wearable music interfaces.

ACM Classification Keywords
H.5.1. Information interfaces and presentation (e.g., HCI): Multimedia Information Systems

Introduction

S.A.R.A. – (synesthetic augmented reality application) is an App exploring the potential of using a mobile device as a unique and wearable musical interface. S.A.R.A. was originally developed as a standalone App to translate the surrounding environment into sounds on mobile devices (iPhone and Android) creating a digitally augmented synesthetic experience. The imagery captured via the mobile device's onboard camera is translated into synesthetic-inspired sounds. In its original development S.A.R.A. has been graciously supported with a 2012 National Endowment for the Arts – New Media Artworks Grant.

Figure 1. Long exposure of the dance performance.

Figure 2. Long exposure of the dance performance.

To demonstrate the capabilities of the technology //benitez_vogl (Margarita Benitez Kent State University and Markus Vogl University of Akron) entered into a collaboration with Kimberly Karpanty (Kent State University) and her Travesty Dance Group in July 2012 to showcase the capabilities of the open source device. The choreography calls for several dancers wearing the app playing on a portable device in conjunction with a mini projector.

Figure 3. First generation neoprene sleeve with iPod and laser pico-projector worn by dancers.

The App produces the video and the sound based on the camera input and the movement of the dancers. It investigates the use of wearable computing technology during performance as well as loosely bases it's technological approach on ludological and synesthetic experiences to let the user explore it's surrounding environments sonically. The role of performer is also augmented as they are now gatekeepers of what sounds are made as well as what images are projected by deciding what live imagery and angles look most

appealing to rebroadcast. Performers can choose to project images on themselves, their co-performers or onto the architectural structures of the venue. This format allows for a completely new interaction with wearable technology – augmenting and mediating their performance via several technological input and output mechanisms while still maintaining choreography as well as allowing for subjective choices during the performance. The Human Computer Interaction between the dancers and the technology as extension of their bodies creates an altered/mediated/mitigated performance environment that is always unique to the specific performance venue.

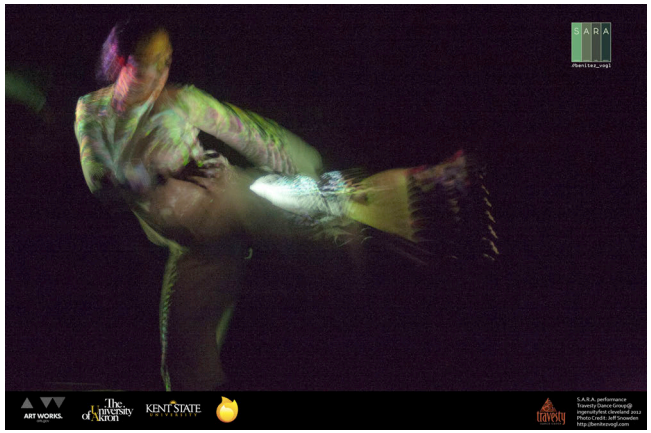

Figure 4. Dancer wearing the S.A.R.A. sleeve with iPod and laser pico-projector.

During the 2013-2014 academic year, Kent State University students were involved in creating costumes for the performance. There were two necessary functions for the costumes: to provide light for the dancer's onboard camera to pick up imagery/dancers and to serve as a projection screen which the dancers could project on using the wearable pico-projectors. The are three components to the costumes (Figures 5 - 7): the LED light up cowl, a tunic (silk organza and mesh) and nylon lycra catsuit. The cowl is composted of a tinyduino, 6 neopixel LEDs, LiPo battery and circuitry made of conductive thread that is inserted through embroidered couching stitches overlayed by silk organza to diffuse the light.

Figure 5. Costume design front.

Figure 6. Costume design back.

Figure 6. Costume design detail.

S.A.R.A. is not only an interface and an interactive software application for consumption, play, discovery and joy but is a jump off point for a larger discussion on transformational strategies in regards to both S.A.R.A. as a wearable musical/performance interface but additionally in the Open Source distribution of S.A.R.A. as a tool.

The technology will be released open source and it is potentially possible to custom craft new versions for every performance or for other dance troupes to adapt the technology with their artistic vision. Creating the App for an existing platform device such as an iPod touch and utilizing a relatively inexpensive laser pico projector. For more information visit: [s-a-r-a.com](s-a-r-a.com)

Figure 7. Still of a S.A.R.A. performance with costumes.

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Acknowledgements

Special thanks for the support of this project to the National Endowment for the Arts Media Arts Grant, Kent State University College of the Arts Catalyst Grant, University of Akron's Buchtel College of Arts and Sciences Seed Funding Award, and Ingenuitylabs from Ingenuity Cleveland.

Chris Yanc, Software Developer

Design + Construction assistance:
Alexandria Petrus (KSU Fashion Design Alumni)
Abigail Steger (KSU Fashion Design Major)
Caroline Dunn (KSU Dance/Costume Design Major)

Photography: Jeff Snowden, Markus Vogl, David Hahn, Justin Bastock, and Andrew Krigline