

Active Space: Embodied Media in Performance

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1 Introduction

The Active Space is an interactive physical environment designed for dance, theatre and music performance. It engages its inhabitants in a dialog of mutual influence involving movement, visuals and sound. A dynamic and flexible interactive performance system integrates video-based motion tracking, motion capture, real-time audio/video processing, high bandwidth networking, and multi-screen real-time computer graphics. The system continually senses, measures and responds to human movement, enabling dancers and participants to interact with responsive behaviors and “play the space” as an instrument.

The Active Space environment has been used to create single-site performances and installations, and also to facilitate multi-site networked performances. As a setting that allows performers to influence and interact with technical elements in a direct, immediate way, it also is used for interactive dance and theatre workshops and performance training.

2 An Embodied Media Environment

Developed by media artist and software designer John Crawford in collaboration with choreographer Lisa Naugle and composer Martin Gotfrit, the Active Space is a site for exploring integration of body-centered performance practices with motion tracking software, motion capture animation, live video and music composition systems.

The technology of the Active Space includes video-based motion tracking systems, real-time video and audio synthesis modules, and a mediabase library of visuals and sound. Responding to movement sensed by the motion tracking component, the Active Space software generates and combines synthesized visuals and sound with non-linear playback of clips and samples from the mediabase. The visuals include motion-captured animation sequences with a variety of physical qualities and characteristics, ranging from pedestrian actions to stylized dance phrases.

Motion tracking involves real-time sensing and analysis of location, speed, duration and various other motion characteristics; the results of this analysis are fed to a computer system that generates video and audio in response to the movement. Motion capture is the technique of sampling movement in 3D space to create graphical representations of the movement. Typical applications of motion capture tend to result in realistic animations, but the aesthetic focus of our Active Space work goes beyond realism to explore notions of imagistic association, embodiment and reflexivity. We are particularly interested in the dynamic that develops between improvisational and compositional elements.

A central objective of our Active Space research is the development of imaginative forms of performance, in which artistic vision and technical innovation share the spotlight. Traditionally, when technology is used in performance, it is common for performers to feel that the technology is “happening to them”, out of their control. Our approach in the Active Space is to create a setting that allows performers to influence and interact

with technical elements in a direct, immediate way. The qualities of this interaction can generate new internal imagery and enhance the performers' motivation, stimulating new forms of interaction between performers as well as with technical elements.

In an installation setting, the Active Space system responds directly to visitors and their motion, creating visuals and sounds that can influence the ways people move in the space. The resulting movement calls up new sequences of sounds and images, potentially inspiring participants to further improvisational movement explorations. This cycle of interaction is exciting to experience, entertaining to watch, and is adaptable to a wide range of performance, workshop and exhibition settings.

3 Responsive Circumstances

“Responsive Circumstances” is a media/dance performance situated in the Active Space. Moving through an imagistic urban landscape, “Responsive Circumstances” is a series of reflections on physical presence in constructed environments, incorporating media fragments (images, sounds, movement, memories) sampled from cities real and imaginary. Influenced and inspired by the “Invisible Cities” of Italo Calvino, we portray the urban experience as an embodiment of collective memory, a repository for narrative that continually evolves through our physical responses to the circumstances we inhabit.

“Responsive Circumstances” usually features two or more dancers plus a musician and a media artist on stage. The dance is contemporary in style, incorporating improvisation guided by choreographic structures. Dancers directly influence the video and audio generated by the Active Space system. A video-based motion tracking component recognizes various characteristics of their movement. The results of this analysis influence the behavior of two real-time interactive composition systems – one for visuals and one for sound. Responding to movement, the composition systems produce synthesized video and audio, combined with non-linear playback of clips and samples.

The performance usually includes a musician and media artist on stage with the dancers. They watch the dance and monitor the interactive behaviors of computer-based music and video composition systems, listening and observing how the Active Space software responds to the movement of the dancers. During some parts of the performance, they play instruments or other devices to produce visuals and sound. At other times, the media artist and musician do not explicitly “play”, but instead make adjustments to parameters and algorithms, tuning the media behaviors, shaping the responsiveness to the circumstances of the dance, as the music and video systems play autonomously.

When dancers, musicians and media performers interact with the Active Space environment, its responses and behaviors become construed as mechanisms for communication. The media system itself becomes a message, or a series of messages, an embodied sequence of codes, exchanged among performers and between performers and audience.

For additional information, visit www.embodied.net/activespace.