
Embodied Sonic Meditation

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ABSTRACT

This project artistically explores new ways of using human movement data to manipulate auditory and visual feedback in real-time in a group performance. Three different digital musical instruments or audio-visual systems are implemented using body-sensing technology and body-audio-visual mapping strategies. Based on Wu's (2017) previous performance research, it connects Eastern philosophy to cognitive science and mindfulness meditative practice, through body expression, voice, electric sound, and data visualization. It augments multidimensional spaces, art forms, and human cognitive feedback. It disrupts the boundary between cultural identities, machine intelligence, and universal human meaning. The collaborative performance initiates a dialog between eastern and western media artists who design and use their own technologies and artistic tools. Through this performance, we are looking into how individual artists and their systems can work as a whole under diverse cultural backgrounds through their gestures and music expressions.

WOODSTOCK'97, July 1997, El Paso, Texas USA

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Group Improvisation

For this iteration of the piece, four improvisers will collaborate using a variety of networked and augmented gestural instruments, which will transduce motion into sound and visuals.

Jiayue Cecilia Wu developed an interactive audio-visual system which uses an infrared sensing device and touchless hand gestures to control a real-time tracking system producing various sonic and visual results.

Lauren Sarah Hayes performs using hybrid analogue/digital live electronics, and her research focuses on enactive and embodied music cognition [1].

John Robert Ferguson is a post-digital/electronic musician who works with gestural controllers, and more recently incorporates movement-derived visual elements into his performance.

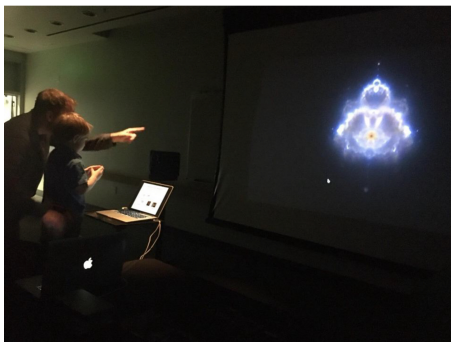


Figure 1: Example of Embodied Sonic Meditation system

CCS CONCEPTS

• **Human-centered computing** → **Collaborative interaction**; *Graphics input devices*; *Sound-based input / output*; *Gestural input*; • **Applied computing** → *Media arts*; *Sound and music computing*;

KEYWORDS

embodied cognition; music; improvisation; gesture; data visualization; movement.

ACM Reference Format:

Jiayue Cecilia Wu, Lauren Hayes, and John R. Ferguson. 1997. Embodied Sonic Meditation. In *Proceedings of ACM Woodstock conference (WOODSTOCK'97)*. ACM, New York, NY, USA, 2 pages. https://doi.org/10.475/123_4

INTRODUCTION

Embodied Sonic Meditation is an artistic practice and theory based on the combination of Tibetan contemplative cultural arts, sensing technology, and human sensibility. It artistically explores the theory of embodied cognition which argues that we reflect on daily events and understand abstract concepts, such as the aesthetics of music and art, through our physical body. The goal of this artistic practice is to improve laypersons' comprehension of the relationship between bodily activities, sounds, and visuals. Embodied Sonic Meditation practice helps one to be aware of how her/his bodily activities can influence the outside world, and, at the same time, how this outside world is reflecting back to one's inner world. It connects media arts and Eastern philosophy of mind and body to cognitive science and mindfulness meditative practice.

Wu's interactive audio-visual system uses an infrared sensing device and touchless hand gestures to control a real-time tracking system producing various sonic and visual results. To track and estimate the subtle gestures of ten fingers that are not typically captured by any existing sensing device, supervised learning algorithms and an artificial neural network were implemented. Six electroacoustic audio processing techniques—Tibetan Throat Singing, spectral-tilt, echo, granular, pitch-shift, and panning effects—were implemented to simultaneously process sound based on the user's hand gestures data with a one-to-one mapping strategy. For the visuals, the Buddhist Mudra (hand gestures) data was mapped to specific parameters of a series of mathematical equations to visualize seven 4-dimensional Buddhabrot deformations.

REFERENCES

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- [2] Jiayue Cecilia Wu, Julius O Smith, Yijun Zhou, and M Wright. 2017. Embodied Sonic Meditation and Its Proof-of-Concept: "Resonance of the Heart". In *Proceedings of the International Computer Music Conference*.