

Title: Immersive Mindfulness

WOOHUN JOO, DIGITAL ARTS AND MEDIA DESIGN, The School of Visual Arts, Pennsylvania State University

ZACHARY GOULD, Environmental Design and Planning, Virginia Tech

AANUOLUWAPO OJELADE, DIGITAL, Industrial and System Engineering, Virginia Tech

1. PROGRAM NOTES

Six users were performed together and an interactive visualization and sound from each user's electroencephalogram (EEG) was transformed into an immersive 360 degree audiovisual experience through 128 multi-layered speakers in the Cube at the Moss Arts Center at Virginia Tech (Fig. 1).

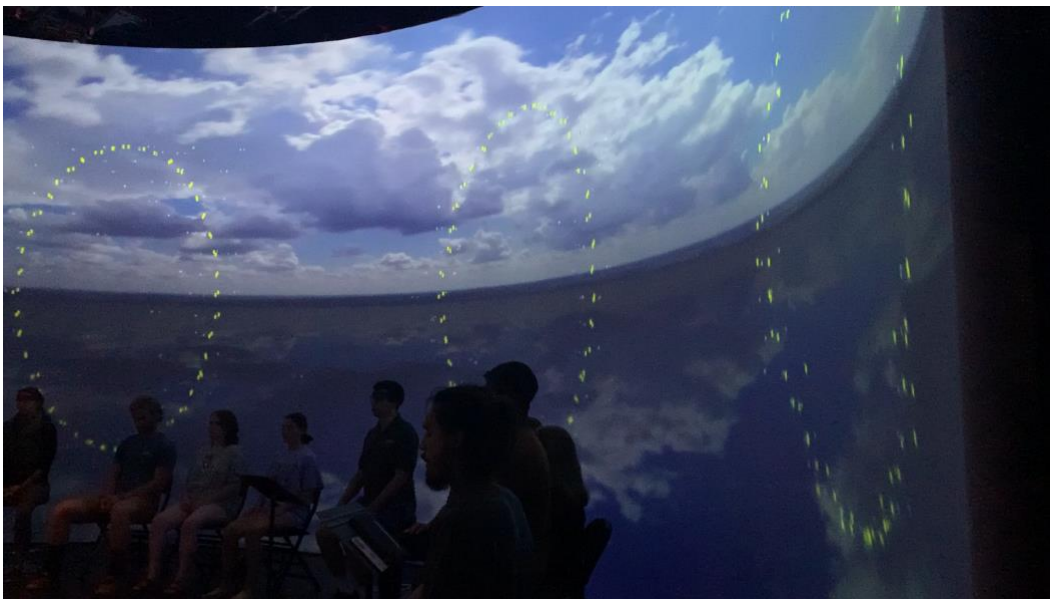


Fig. 1. Immersive Mindfulness in the Cube

2. PROJECT DESCRIPTION

Immersive Mindfulness is EEG-driven sonification for meditation. The sonification engine consists of one four-voice sampler and one custom synth that I designed.

The sampler section plays four choir voices mixed in four different pitches, and the synthesizer section has three components, each with seven voices with different pitches. Each voice has two main oscillators (triangle and square), and the mixing level changes according to the incoming data (Fig. 2).

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Pitch in the sampler and the synth, the timbre of the synth, the sound modulation level, and the mixing ratio between the sampler and the synth continuously change by my using heart rate, stillness, EEG amplitude, and alpha power from Muse S [1]. In the visualization component, those four values were presented as different colored circles, and the particles that made up the circles was deformed and reformed according to the parameter value changes (Fig. 3-1) (Fig. 3-2).

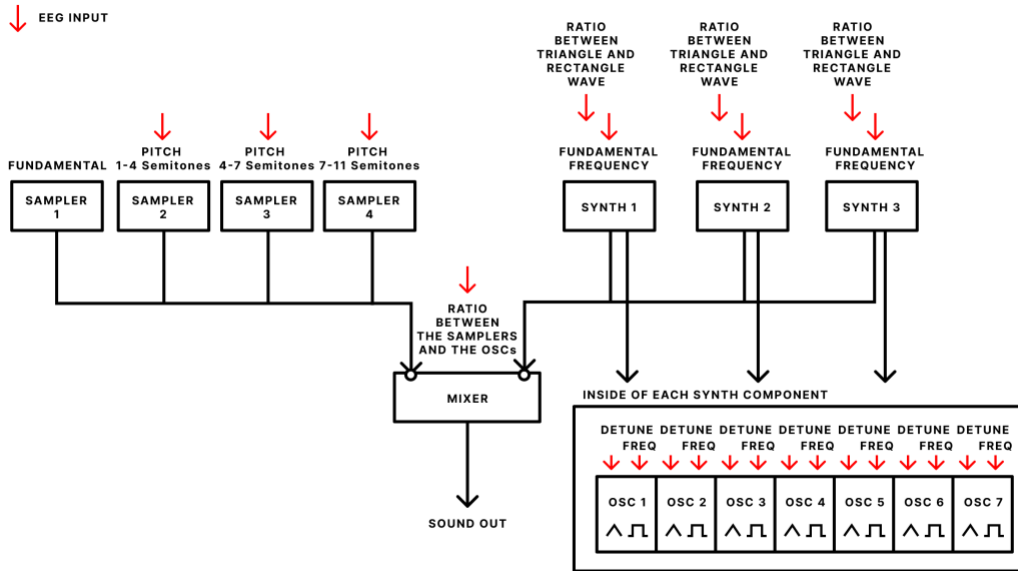


Fig. 2. EEG Sonification Design

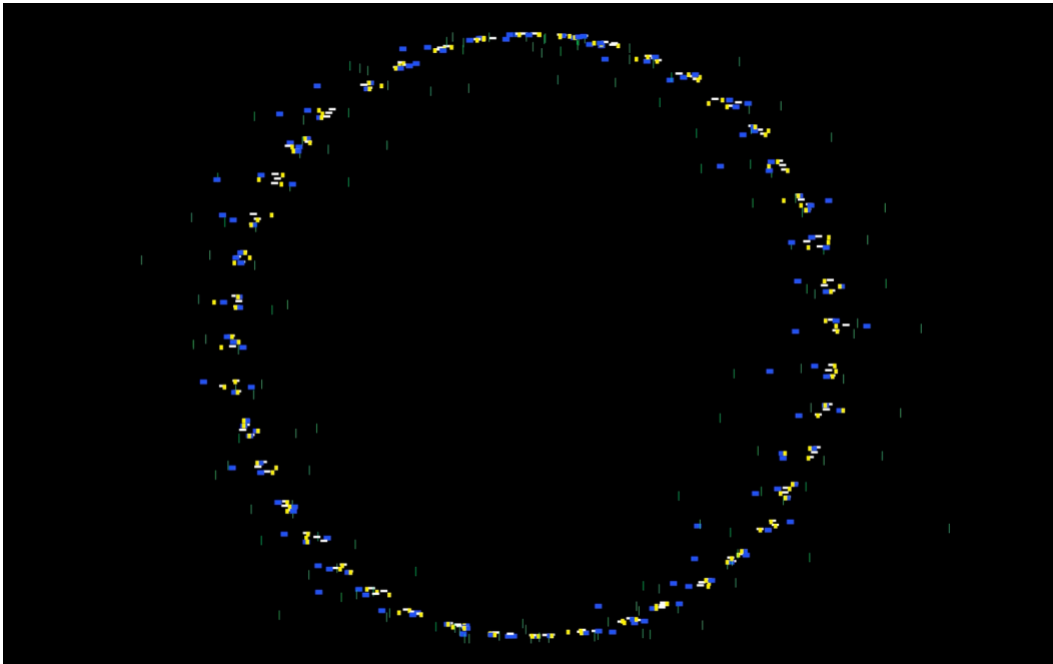


Fig. 3-1. EEG Visualization: Default

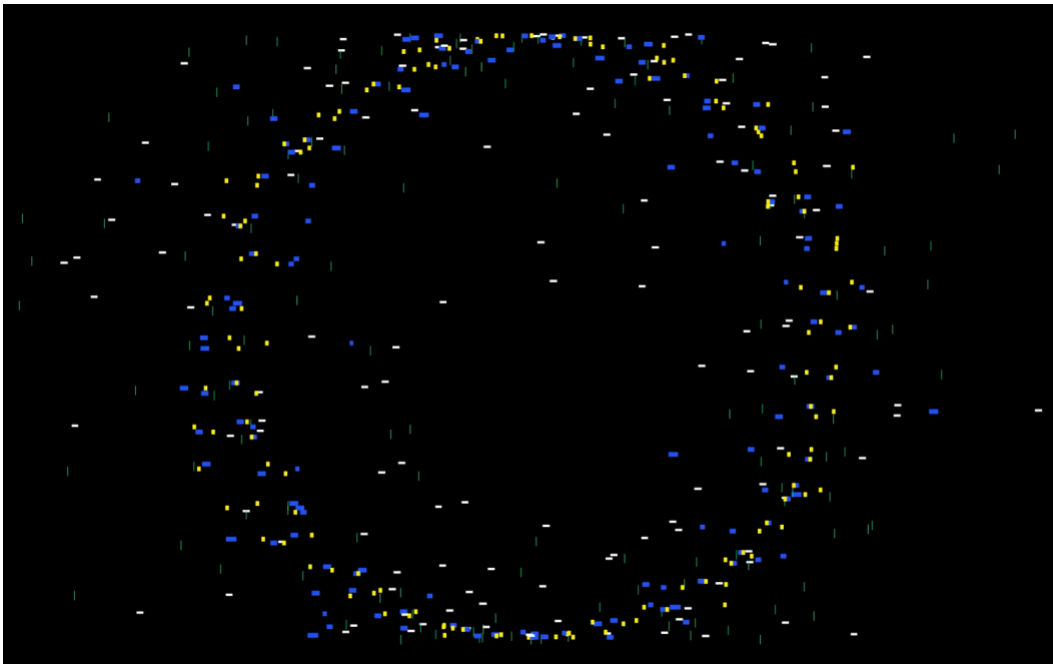


Fig. 3-2. EEG Visualization: Deforming and Reforming

3. PERFORMANCE NOTES

We invited people for an interactive sound mediation in the Cube at Virginia Tech's Moss Arts Center. Breath, heart beat, and brainwave biometrics were

transformed into an immersive 360 degree audiovisual experience. Elements of breathwork and mantra were woven together into a technological introduction to the foundations of Nada – the yoga of sound.

This work is available for both web-based and on-site installation. For on-site installation for a solo demo, this work requires a MacBook Pro, a Muse S device, a pair of monitor speakers, and a projector. I can bring all the equipment except the projector.

4. MEDIA LINK(S)

- Video 1 (Solo): https://youtu.be/1t8m_FHOr28
- Video 2 (Group): <https://youtu.be/Kewtn4G1UQQ>

ETHICAL STANDARDS

Please note, that if any elements of the submitted work involve research with people or animals, authors should include a section “Compliance with Ethical Standards” before the References, including (if relevant): information regarding sources of funding, potential conflicts of interest (financial or non-financial), informed consent if the research involved human participants, statement on welfare of animals if the research involved animals.

REFERENCES

- [1] “Muse™ EEG-Powered Meditation & Sleep Headband.” [Online]. Available: <https://choosemuse.com/>. [Accessed: 20-Jan-2023].