Installation Work submission for Audio Mostly 2023

Composer name and contact details

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Title of the work

Deep Space Game

Statement of the relevance of the work to the conference theme and/or topics

This work relates to the conference theme of "Embodies Sound in the Virtual".

Program notes

This work is a multimodal interactive sound installation(game) with special interface : eight rubbing/tactile sensors. Experience visitor controls sounds and 3D graphics with this interface in realtime, immerse oneself in the output multimedia (virtual space). In addition to that, the rubbing/tactile sensors return to fingers with real physical reaction which sensory reminds about the real and virtual. The game has two modes, first a "practice" mode with static graphics to understand the relationship between sensor control and the generated sound/3D graphics, and then a "challenge" mode with dynamic graphics to control the sensors for a state of deep space immersion.

The little fingers of both hands support the enclosure, and the remaining four fingers of each hand softly press a total of eight rubbing/tactile sensors. It is important not to push the sensor to its limit, but to push it gently until it is near the middle of the range. And furthermore, to fine-tune the sensor with force releasing so that the four channels of sensor output data for each finger are at the same level as much as possible. Displayed in 3D space are the 8*8*8=512 reflective spheres that make up the cube, the "black hole" at its center, and the "light sources" at the eight vertices of the cube. The positions of the "light sources" at the eight vertices of the cube in this 3D space are controlled by the corresponding eight fingers. When no force is applied to the sensors, the "light sources" are at the apexes of the cube. And they will move toward the central "black hole" if the values of the four channels are equal, but if the sensor values exceed the intermediate values, the "light sources" will move through to the opposite side. If the values of the four channels are not equal, the "light source" will deviate from the direction toward the center. The sound is 8-channel sine waves corresponding to the sensor, and their pitch is proportional to the distance between the "light source" and the central "black hole" in this 3D space, so that the initially deafening pitch at the apex becomes low frequency and inaudible as it successfully enters the "black hole. As they get closer to the "black hole," a deeper reverberation is created in the overall acoustics.

This system is as a "Serious Game", for "MCI prevention" (activating the brain through the sense of touch at the fingertips in conjunction with hearing and vision). According to the theory of Interoception, the rubbing/tactile sensor operation and soft physical reactions of this system are closely related to human Emotion/Feeling, etc. By paying attention to all eight fingers, applying and relaxing pressure to gently and evenly press the sensor, and experiencing the accompanying sound and 3D graphics biofeedback, humans involuntarily smile and experience a sense of wellness with gentle feeling. Professionals who experienced this installation work (nursing,

caregiving, therapy) gave it high marks for its significance as a serious game effective for rehabilitation.

A recorded video of an experimental demonstration can be found below. In the demonstration video, some of the parameters are changed manually, but they change automatically as an installation/game work.

http://www.youtube.com/watch?v=Xst9dXRCALU   (silent)
http://www.youtube.com/watch?v=C0oaxStd5Q4
http://www.youtube.com/watch?v=ObDPpRR5oiE
https://www.youtube.com/watch?v=eO_BEA6yakU

Technical requirements (audio and visual)

This system connects the original interface to the host Mac via USB, runs the originally developed Max8 (Cycling'74) patches, displays the Mac's graphics output on a large monitor or projection, and plays the Mac's stereo sound over a PA. There are three forms in which this installation/game can be displayed: minimum, intermediate, and maximum.

As a minimum system, the composer's own MacBookAir along with the interface can work alone, but the small (11-inch) MacBookAir screen and built-in speaker sound are not sufficient for an immersive experience.

In the recommended intermediate system, the composer brings his own MacBookAir for graphics and sound output, the AM2023 host provides a large monitor or projection for graphic display, and the host provides a PA for stereo sound. In this case, however, this installation game exhibit time is limited to a very small portion of the time, since the experience cannot be exhibited during the period when the composer brings the MacBookAir to AM2023 to participate.

The most recommended system is to prepare the AM2023 host not only a large monitor or projector and a PA, but also a Mac running the Max8 patches. In this case, there is no need to purchase a Max8 license. If you download and install Max8 (version 8.3.3 or later is recommended) from the Cycling'74 website, you can run the original Max8 patch and keep the interface in the exhibit hall, this will allow you to exhibit for a sufficient period of time. Max8 has a Windows version as well as a Mac version, and the patches are compatible, but the composer has not confirmed this and cannot guarantee it.

Required room layout

One desk and chair, a large monitor or projection screen to experience the graphics, and a stereo PA. A slightly darker room is recommended for a better immersive experience. The "practice" mode and "challenge" mode can be switched back and forth using the space key on the Mac, but I would prefer to have an explainer to assist the experiencer with the operation if possible.

Duration

Assuming that the time for the audience to enjoy this game, it can be assumed to be 5 to 8 minutes per person. Some of the people who actually experienced this game went deeper than 15 minutes the whole time!