Sonic Virtuality

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Introduction

Sonic Virtuality focuses on the development of sonic technologies as spatial mediums. It takes Meta's Image Bind model of multi - modal AI where sound can be used to construct an audio visual scene or potentially a virtual space as a point of departure. The key question we aim to ask is what kind of experiences would be made possible if multi - modal AI were built outside of ocular - centric modalities of sensory perception. How can we use sound as a starting point in thinking about how generative AI can produce scenes or space. At its broadest, Sonic Virtuality produces experimental research that articulates the space between sonic, spatial and interaction design.

Background

"Sonic Virtuality," is built upon my research at ToftH that aimed to reimagine auditory communication and creation through an innovative listening network. This network redefines the origins and capabilities of sound, challenging traditional perceptions shaped by silent knowledge acquisition, like Plato's Cave analogy. Historically, artificially generated virtual overlays on physical spaces haven't emphasized sound's potential in experience creation. From this research, my current investigation aims to revolutionise the value of sound in technology, imagining virtual worlds with sound as a foundational element. My initial research focused on Augmented Reality (AR) experiences where discovering and creating sound, irrespective of its source or creator, merge. This starting point allowed me to reach a point where I now aim to redefine the nature, infrastructure, and visual experiences of virtual worlds, centering them around the auditory

Objectives and Scope

Sonic Virtuality is a research based practice investigating algorithmic approaches to synthesis that derive from non - western epistemologies of sound. We focus on using ML models that generate raw audio or through the development of cybernetic interfaces in Max MSP. Here, we build tools and technologies that can create compositions or interactive digital audio experiences. Here, we build sound for virtual environments, primarily through an experimentation with ambisonics technology for AR / VR experiences.

Methodology

This research methodology integrates algorithmic, multi-modal generative AI with interaction design for enhanced sound in virtual experiences, especially game engines. It analyzes existing sound paradigms, develops AI for dynamic soundscapes using multi-modal data, and applies interaction design principles. The approach is iteratively refined using user feedback to ensure immersive, contextually appropriate audio.

Key Findings or Contributions

I am exploring audio-spatial design as a sound and machine learning consultant on a vast spatial audio installation for a multi-modal ML-generated audio-visual performance at CERN in 2024. My role involves leveraging ML algorithms to create immersive, spatially dynamic soundscapes that complement and enhance the visual elements of the performance.

Future Directions

I aim to use this year as a testing ground to develop, implement and disseminate machine learning narratives and experiments that can aid top sonic technology companies, such as Apple or Bose, in understanding their future role in ML-driven music technology and sonic spatial experiences. This involves pioneering research and innovative applications that bridge the gap between advanced ML techniques and evolving auditory technologies.

References

My work is an attempt to synthesize the efforts of leading sound practitioners such as Lawrence Abu Hamdan and Khyam Allami and apply these insights to the research and development of virtual experiences and interactive audio.