Soundscape

Virtual Reality Audiovisual Experience

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Contents

[1 Introduction 3](#_Toc528865490)

[1.1 Finish 3](#_Toc528865491)

[2 Application / Product 3](#_Toc528865492)

[2.1 Start 3](#_Toc528865493)

[3 Background 3](#_Toc528865494)

[3.1 Finish 3](#_Toc528865495)

[4 Design 3](#_Toc528865496)

[4.1 VR Structure in Unity 3](#_Toc528865497)

[4.2 Musical Compositions / Style 3](#_Toc528865498)

[5 Implementation 3](#_Toc528865499)

[5.1 Unity Development Kits 3](#_Toc528865500)

[5.2 Ableton Music Editing 4](#_Toc528865501)

[5.3 Obstacles 4](#_Toc528865502)

[5.3.1 Platform Capabilities 4](#_Toc528865503)

[6 Analysis and Verification 4](#_Toc528865504)

[6.1 Playtesting 4](#_Toc528865505)

[6.1.1 Survey Results 4](#_Toc528865506)

[6.1.2 Reviews 4](#_Toc528865507)

[6.2 Industry Specialist Review 4](#_Toc528865508)

[7 Interdisciplinary Connections 5](#_Toc528865509)

[7.1 Start. 5](#_Toc528865510)

[8 Related Work 5](#_Toc528865511)

[8.1 VR: Music Visualizers / Interactive Applications 5](#_Toc528865512)

[8.1.1 Playthings VR 5](#_Toc528865513)

[8.1.2 Beat Saber 5](#_Toc528865514)

[8.1.3 Raybeem VR Music Visualizer 5](#_Toc528865515)

[8.2 Music Visualizers / Interactive Musical Applications 5](#_Toc528865516)

[8.3 Personal Previous Work 5](#_Toc528865517)

[8.3.1 Band Wagon 5](#_Toc528865518)

[9 Future Work 6](#_Toc528865519)

[10 Conclusion 6](#_Toc528865520)

# Introduction

## Problem Statement

Current audio implementation in most VR experiences is underutilized. This project aims to demonstrate the power of audio when developing a VR environment or experience. By setting up an environment for a user to interact and experiment with, this project aims to achieve a deeper impact on the user via interactive visual and audio cues.

## Project Goal

To develop a visually and auditorily immersive virtual reality experience to further explore the capacity of audiovisual components of VR environments. The user will be able to interact with virtual instruments in the environment via controller input and microphone input, to generate correlated audiovisual output in the environment.

# Application / Product

## Start

# Background

## Finish

# Design

Start

## VR Structure in Unity

## Structure of Audio Style

### Background Ambient Music Compositions

### Sound Effects for Interactable Objects

## Version Control

For ease of personal record keeping and the ability to revert back to prior editions in the case of fault, I used Github to document my changes and have a reliable backup of version of my project.

# Implementation

Overview of the development process, including technologies used and the nuances of working with these technologies. Structure of this section is largely chronological in terms of my work process.

## Unity Development Kits

Bulleted list.

## Ableton Live 10 Music Editing

Bulleted list.

## Obstacles

This section documents the most notable impediments that arose during development, from platform issues to nuances of designing for virtual reality environments.

### Platform Capabilities

Initial development was conducted on a MacBook Pro, Mid 2012; though a versatile machine, due to the architecture and design The Oculus development kits (see references x.x) were able to be installed and developed with in the Unity version of MonoDevelop, but this machine has no support for running the actual headset. Developing in this manner was a tedious process, as testing could only occur at a much slower rate.

For example, post-processing effects – such as chromatic aberration and motion blur (included in Unity’s post-processing plugin – immediately caused discomfort once displayed in the Oculus headset. When testing on-screen, these effects seemed harmless; it is important to note that discrepancies in quality can be easily overlooked if development is not concurrently checked in the VR environment.

# Analysis and Verification

Bulleted list.

## Playtesting

### Survey Results

Link to Google Forms…

### Reviews

First-hand accounts.

## Industry Specialist Review

Thanks Dad.

# Interdisciplinary Connections

## Start.

Computer Science, Music, and Computer Graphics happily married. Polyamorous. Woo lol

# Related Work

Finish.

## VR: Music Visualizers / Interactive Applications

The following sections catalog previous work done in virtual reality for music visualization, or in interactive musical experiences. To varying degrees of complexity, interactivity, and visual and auditory intensities, the following examples proved to be great sources of inspiration.

### Playthings VR

Link and speak of its awesomeness.

### Beat Saber

Freakin awesome. So fun, cool, and relaxing.

### Raybeem VR Music Visualizer

Rinse and repeat of above.

## Music Visualizers / Interactive Musical Applications

## Personal Previous Work

### Band Wagon

Prior (and concurrently) to developing Soundscape, I contributed in development to a rhythm-based game developed entirely in Unreal Engine 4. Programming rhythm-based mechanics helped develop familiarity with game programming with audio as the premier attribute to the application. This project also greatly helped familiarize with FMOD studio, a tool that proved to be very valuable to the functionality of Soundscape’s interactive musical aspects.

#### Sound Design and Soundtrack

Between Ableton Live 10, Studio One, and Garage Band, I had accumulated ample experience designing audio for an interactive experience. Viewed too often as independent entities in the game development process, I concurrently crafted both the soundtrack and audio cues to mesh with one another.  
  
In terms of soundtrack, creating a background track that was repeatable without being distracting yet while avoiding becoming overly repetitive was key.  
  
Sound effects (SFX) were integral to this game as it was one of the main cues the player got that indicated their performance. Player performance and enjoyment was significantly improved with refined SFX rather than solely visual cues. Adding subtle cues and balancing with the current cues, rather than increasing – and thereby risking overdoing – different cues to the player yielded better results during playtesting.

# Future Work

## Thesis Lead-In

# Conclusion