COMSM0127
Immersive Interaction and Audio Design

Rusted Rhythms Technical Report

Edward Guo

Tim Lau

Hanbo Zheng

Jingjie Ke

Guohao Chen

Yang Pu

Contents

1 Introduction

Virtual Reality (VR) is an innovative technology that offers users the ability to immerse themselves in new and engaging experiences, transcending the limitations of time and space to explore environments that feel almost real. This unique sense of presence is achieved through a combination of sophisticated interaction systems and realistic audio effects that make VR experiences truly captivating.

With this in mind, we set out to create Rusted Rhythms, an immersive and interactive VR experience that blends exploration and creativity within a desolate factory setting. The primary goal of the project was to develop a space where users could interact with objects in intuitive and engaging ways to create rhythmic musical compositions. Our vision was to offer players the opportunity to transform an abandoned factory into a vibrant soundscape by tapping, striking, and exploring various objects to uncover their unique auditory properties.

Rusted Rhythms is more than just a virtual environment—it is a dynamic and creative playground that encourages exploration and experimentation. The game combines realistic object physics with unexpected and delightful interactions to captivate users, balancing realistic and fantastical elements to deliver a unique and memorable experience. The industrial setting, with its scattered debris and interactive objects, provides a visually rich and atmospheric backdrop for users to compose rhythms and melodies, making each session distinct and personal.

Our target audience includes individuals who enjoy creative exploration and music-based games. Rusted Rhythms is designed to appeal to both casual players and VR enthusiasts by offering an intuitive and immersive gameplay experience. The inclusion of rhythmic loops, dynamic audio effects, and surprising feedback mechanisms ensures that players are consistently engaged and delighted throughout their interaction with the game.

To enhance user immersion, we implemented several key features:

1. **Intuitive Interaction**: The game incorporates XR direct interaction and ray-based interaction systems, allowing players to pick up and manipulate objects naturally and efficiently.
2. **Dynamic Audio Feedback**: Each object produces unique sounds based on its material properties, and players can create layered compositions using rhythmic loops.
3. **Dual Locomotion Modes**: Users can switch between teleportation and continuous movement to suit their comfort levels, ensuring accessibility and engagement.
4. **Special Effects and Animations**: Interactions trigger feedback animations and unexpected effects, blending realistic and fantastical elements to heighten the sense of wonder.
5. **Spatialized Sound**: Using Steam Audio, we created accurate 3D soundscapes that provide realistic auditory immersion by simulating sound reflections and directions.

6. **Hand Menu Integration**: The hand-attached menu offers seamless access to gameplay settings and controls, enhancing usability without disrupting immersion.

In summary, our team made design choices that prioritize user immersion, creativity, and intuitive interaction in the VR experience. Everyone has contributed during the project, so we decided to divide the equity equally, as shown in Figure 1. This report will provide a detailed account of how we developed Rusted Rhythms, highlighting the processes, challenges, and solutions involved. In the next chapter, we will delve into the background research, techniques, and academic considerations that shaped our product.

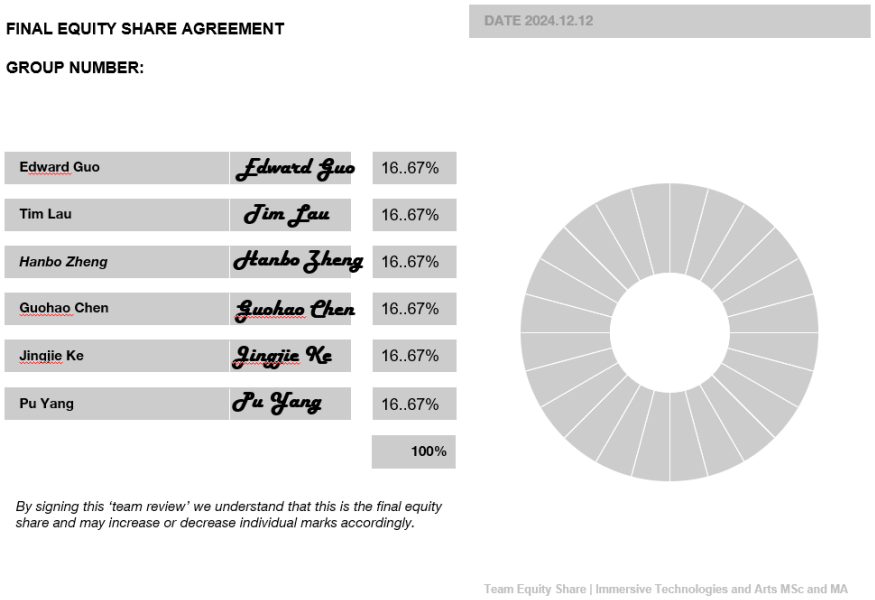


Figure 1: Group Contribution

2 Background

Virtual reality environments (VR) have become very common among young users, and there are more and more fully VR or VR-compatible games and tools on various platforms such as Meta, Steam and PlayStation, and the number is expected to grow further. Several of the most popular games in the Meta Quest store are exercise or sports games. Sports games can increase play time, which increases popularity. On the Quest platform, games such as Beat Saber and Pistol Whip, which are based on the user's movements and body movements synchronized with the rhythm of music, have the largest player base. Games are also very effective as auxiliary tools to improve users' rhythm performance and perception[1].

Figure 2: Virtuoso

There is also a representative work in the store called "Virtuoso" as shown in Figure 2. Virtuoso is a virtual reality (VR) game designed for music lovers and creators. It turns VR devices into a powerful music creation tool, providing a free sandbox environment for players to create, play and share their own music. Unlike traditional games, it is more like a creative platform that focuses on music creation. With its simple and easy-to-use interface and unique instrument design, Virtuoso turns VR into a music creation space with unlimited possibilities, which is very suitable for users who want to experience artistic creation in VR.

The game Virtuoso is not very friendly to people without music basics. Its functions are very complicated and need some time to learn. But its track function, a sequencer-based tool for making looping melodies, gave us inspiration for our project. Different music can be composed by combining different repeated melodies. Henry's video also verified the feasibility of our idea[2]. In his video, he used a tool called loopstation. It is also called a loop pedal, which is an electronic device that helps musicians record, store and play back audio clips in real time and allows additional audio signals to be superimposed. This device was first implemented by guitar legend Les Paul using tape reels, and modern loop stations can achieve real-time recording and playback with greater efficiency and convenience with the help of digital technology. The first generation of digital loop

station products, such as Lexicon JamMan and Echoplex Digital Pro, appeared in the 1990s. With the development of semiconductor technology, these devices became more miniaturized and cheaper, and introduced functions such as multi-track recording, making them an indispensable tool for all kinds of music performers.[3] We plan to simply implement the loopstation function in the game through audio control scripts.

Figure 3: loopstation

In summary, after background research, we determined that the main goal was to create a simple piece of music with different repetitive melodies that players could produce by tapping different objects. At the same time, due to time constraints, the project focused on interaction methods and audio control.

3 Project Execution

3.1 Environment Design

Our project was inspired by a creative video in which the author tapped different objects in an empty field and played the sounds they made at a fixed rhythm, gradually overlaying them to create a short piece of music. This combination of interaction and music creation piqued our interest, so we set the game in an abandoned factory lot to provide an open, free environment that both met the player's exploration needs and provided an ideal backdrop for various interactive designs.

The scene was taken from free resources in the Unity Asset Store, and an open and industrial area was chosen as the game's main interactive venue. Industrial elements such as rusted metal storage tanks, scattered wooden boxes, dilapidated containers and fences are preserved within the site, details that shape a desolate, abandoned factory environment while providing a rich sense of visual layering and interactive possibilities. The layout of the area is adjusted so that the player can move freely within the interactive core and interact with objects in the scene, such as tapping bottles or barrels.

Figure 4: Game Scene

The empty space of the abandoned factory is extremely open, allowing the player to move freely and explore the scene, while accommodating a wide variety of objects for the player to interact with. In the central area of the scene, we designed some special item layout to make it easier for the player to quickly start interacting, such as setting up a sign in front of the player to let the player know that the stick and drill are placed on the right side as the initial interaction tools. The players can pick up sticks to find interactive objects scattered throughout the scene, such as glass bottles placed on boxes.

Each object gives it a unique sound and interaction based on its material properties. Some objects play an immediate sound effect after being struck, such as the crunching sound of metal or the shattering sound of glass; Special objects trigger recurring rhythm sounds that form a fixed rhythm for the player to overlay and combine.

3.2 Interaction

3.2.1 Locomotion

The goal of the game is to create an immersive and engaging virtual experience for the player, and choosing the right way to move is crucial to achieving this goal. Proper movement design can help players explore virtual environments more intuitively, while avoiding uncomfortable reactions such as motion sickness. To provide a more flexible and personalized experience, the project designed a hand UI that allows the player to choose between Teleport Movement and Continuous Movement. With this design, players can freely switch their movements according to their preferences, so that they can explore and enjoy the game more effectively in different scenarios.

Figure 5: Selection for Locomotion

In this interface, the user can choose whether to transfer the movement or continuous movement. Each mode of movement has its advantages and disadvantages. Continuous movement is controlled by the left hand joystick and moves freely through the scene in a linear manner, which simulates the way movement in the real world, and is more natural than teleport movement and provides more immersion. At the same time, it enables more precise movement control, allowing users to better interact with objects, such as approaching smaller target objects or operating in narrow Spaces. However, the high immersion of continuous movement comes with certain risks, and prolonged continuous movement can cause users to develop motion sickness, manifested by discomfort such as dizziness and nausea, mainly due to the inconsistency between vision and body perception.

In order to solve this problem, a second type of movement - teleport movement - was added to the system. When the user selects a transfer move, a ray is generated on the left hand, through which the user can select the target area and transfer to the specified location instantaneously. The advantage of teleport movement is that it can effectively reduce the user's sense of dizziness, because it avoids the discomfort of continuous visual flow, and it is also more suitable for novice players. However, teleportation also has some drawbacks, such as reducing immersion and coherence of the environment when moving

rapidly or exploring scenes, increasing disorientation, and reducing presence in virtual environments[4].

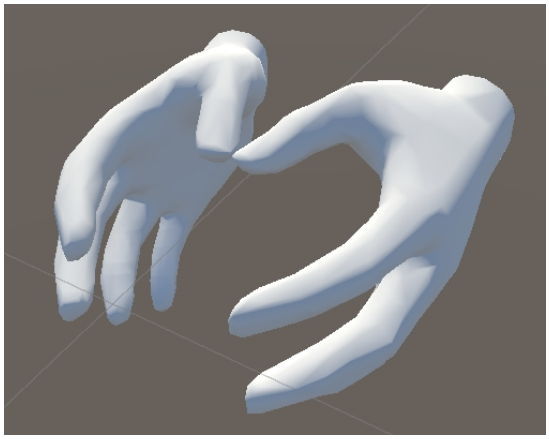
To further reduce vertigo and optimize the overall experience, the view Angle rotation is designed with snap turn. This method quickly rotates the viewing Angle through a preset fixed Angle, avoiding the visual conflict problem caused by free rotation. At the same time, since these two mobile modes have their own advantages in different scenarios and needs, the system allows users to switch freely in the interface in order to choose a more suitable mobile mode according to the actual situation. This design balances the need for immersion with comfort, significantly enhancing the overall user experience

3.2.2 Audio Objects

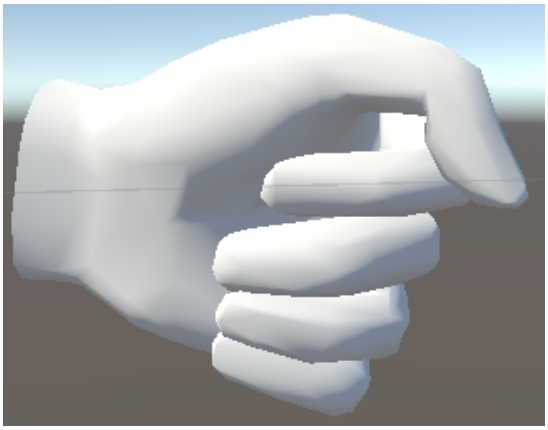
In this project, players can interact with different objects through a bat. The grasping of the bat is mainly achieved through the XR direct interactor provided by the XR toolkit, but when using teleport movement, the bat can also be grasped from a distance through the ray on the left hand. XR direct interactor and simulates the grasping method in the real world. Users can complete grasping by directly touching virtual objects and pressing the trigger button. This design not only allows users to immerse themselves more in the virtual environment, but also has the advantages of intuitive operation and fast response. In addition, XR direct interactor does not require a complex learning process, and users can easily get started, meeting the needs of both novice and experienced players. Therefore, choosing XR direct interactor as the basic interaction method provides a natural and smooth interaction experience for the game, while balancing usability and immersion.

In order to make the game more immersive, a hand model was added to the game as shown in Figure 6a. The model was downloaded from Justin's Patreon[5]. It only has a left hand, and the right hand is obtained by mirroring the left hand. Because a single-hand model is used, it is more convenient for animation production and script writing. The animation is made using the animation tool that comes with Unity. Figure 6b shows the state of a hand when it is clenched. Animation can generate animation by simply rotating the finger joints of the model. After the animation is completed, the animation is divided into two *avator masks*, and the trigger button of the handle controls the animation of the index finger and thumb, and the grab button controls the animation of the remaining three fingers. The *blend tree* module in the animator controller tool is used to perform logical processing and set parameters for the animation. Finally, a script is written to play the corresponding animation by detecting the readings of the trigger button and the grab button.

The basic interaction logic between players and objects is to trigger sound feedback by hitting the corresponding object with a bat. The interactive logic is divided into three levels: firstly, the most basic object types. When the player hits these objects with a bat, they immediately make a one-time sound, which is simple and direct, mainly used to provide a basic interactive experience. Secondly, there are objects with cyclic rhythm sound effects that trigger a fixed rhythm sound loop when struck, providing the core building for the game's music elements. This type of object allows players to create and superimpose unique rhythmic combinations by striking different objects. Finally, there



(a) hand model



(b) closed hand

Figure 6: Hand animation

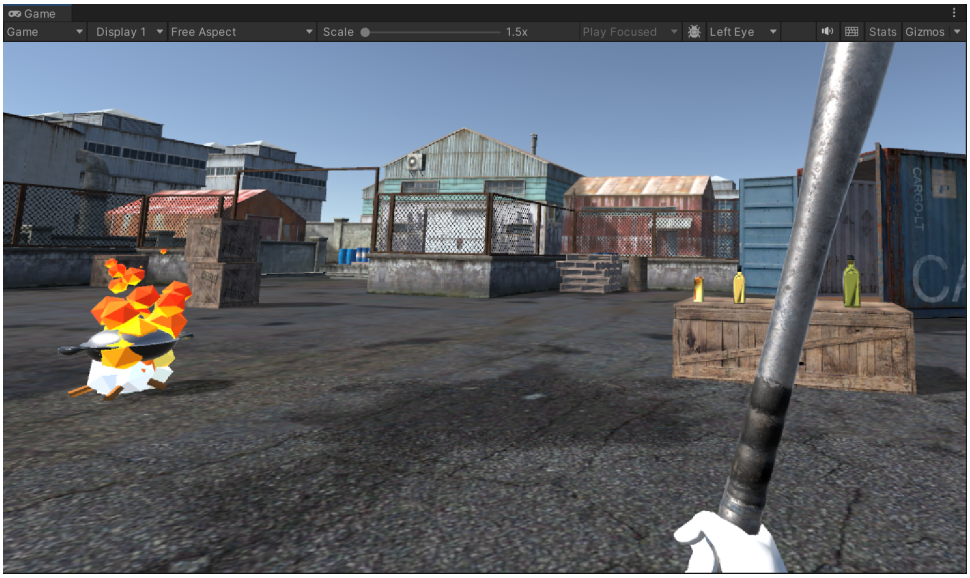
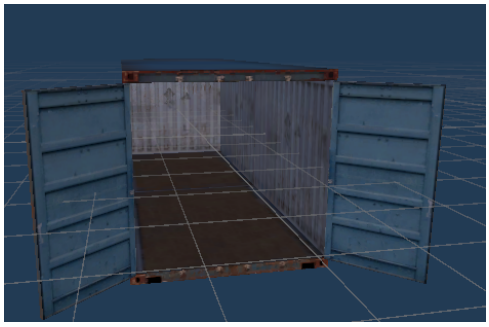


Figure 7: Interact with bat

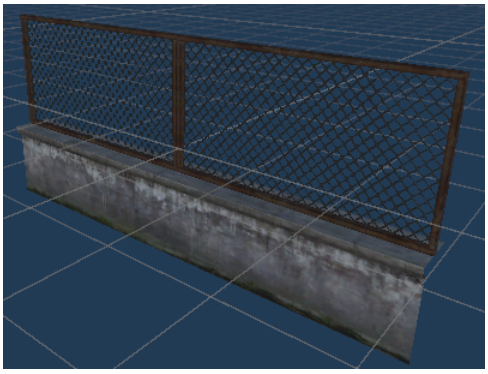
are objects with special impact feedback, which not only play sound effects but also trigger additional visual or physical feedback, such as glass bottles breaking and accompanied by cracking sound effects and animations when struck. This layered interactive logic not only enhances the fun and depth of the game, but also provides players with diverse exploration and creative space

In the most basic objects, only basic collision detection and sound effects are loaded. When players use a bat to strike these objects, the objects immediately make a one-time sound, which is the simplest form of interaction and is mainly used to provide direct and intuitive strike feedback, helping players familiarize themselves with the basic mechanisms of the game.the related objects is shown as Figure 8.

Objects with cyclic rhythm sound effects are the advanced part of game interaction logic. When these objects are hit, they trigger a fixed rhythm sound loop to create rich musical effects. This adds a core element of music creation to the game, allowing players



(a) container



(b) Railing

(c) Oil Box,Board,and Electric box

Figure 8: Basic Objects

to overlay various rhythms by striking different objects, thus creating unique musical works. This enhances the fun of the game and allows players to find a balance between rhythm and sound effects during the exploration process.

(a) Juice

(b) Wine

(c) Soda Can

(d) Oil

Figure 9: Objects with rhythm

In addition, `XR Grab Interactable.cs` are mounted on these objects, allowing players to also grab them. And these objects are also loaded with `Object Collision.cs`, which triggers collision detection and emits corresponding sound feedback when they are grabbed and thrown to the ground

The game is in the style of an abandoned factory, so the common tool electric drill is also added to the game as shown in Figure 10. The electric drill model was downloaded from the turbosquid website. It was imported into Unity and animated. It is controlled by the script `drillcontroller.cs`. When the electric drill is grabbed and the trigger button is pressed, the electric drill is activated and the drill rotation animation and sound are played. The animation and sound scripts of the electric drill are different from those of other items. When the script was first written, the grab button and the trigger button were detected at the same time to trigger the animation and sound effects. This resulted in the animation and sound effects being played even if the electric drill was no longer in the hand, achieving a kind of force effect in Star Wars. This did not match our realistic style. By modifying the code to use grab detection, the expected effect was finally achieved. Due to time constraints, the interaction between the electric drill and other objects was not made.

Figure 10: electric drill

3.2.3 Special hit feedback

In terms of the interaction between players and objects, objects will respond with two different animations. One is the interactive feedback animation.The other is the activation feedback animation.

1. **Interactive feedback animation**
   When the player hits the object with a baseball bat, the object will play a realistic animation of being hit and make a sound, giving feedback to the player's interaction, making the interaction more realistic.

2. **Activation feedback animation**
   This animation occurs after the player interacts with the object. The object will play or repeat an animation to prompt the player that the object has interacted with it.

However, unlike the general design concept, the activation animation with non-realistic elements is intentionally added to this game to make the animation after the player interacts with the object more suspenseful. The animation content of the object after activation is unpredictable, thus creating a sense of suspense: the player cannot guess what will happen to the object after the interaction and keeps looking forward to it. This sense of suspense will further stimulate the player's desire to participate, which is called the paradox of suspense in psychology [6]. For example, when a pot is hit, it will make a bang sound in line with the real reaction and jump slightly due to the reaction force. After a few seconds, the lid of the container will repeatedly jump and fly up as shown in Figure 11, which is not in line with the real reaction, but this sense of fun is an important element of this game. In the animation design, the pot lid is blown up by the strong steam that is activated, and to attract the player's attention, the pot lid will shoot out bullet-like steam balls while rotating in the air, creating an atmosphere similar to fireworks.

Figure 11: Pan

The object with the most special feedback in the game is a radio as shown in Figure 12a. After being hit, the radio will briefly play a piece of music with a very poor signal as the interactive feedback of this object. The activation feedback animation is more contrasting. A row of fleets will suddenly appear in the sky on one side, and a giant cannon will rise on the other side to fight with the fleet. The sky is full of rainbow rays that are shot from both sides. The triggering and playback design of this animation is inspired by the 2024 movie Godzilla vs. Kong [7]. When Godzilla appears, it is accompanied by a chaos of electronic signals, so the poor radio signal implies the arrival of aliens. The players caught between the two giants are like the people on the battleship caught between Godzilla and King Kong in the movie. They cannot affect the battle and can only watch the performance of the battle and then do their own thing as shown in Figure 12b. But the play space in the middle will appear as colorful as a disco. Through this scene, players can continue to play, just like a carnival before doomsday.

(a) Radio

(b) Giant War

Figure 12: Radio interaction

3.2.4 Hand Menu

The Hand Menu is an essential feature designed in Rusted Rhythms to enhance user interaction. It allows the user access to the tool or setting directly through a visual menu attached to their hand, which enables intuitive and efficient interactions. This section discusses the design and implementation of the Hand Menu, including the technical steps and tools used. The key functionalities of the Hand Menu include:

1. **Audio Control**
   Audio Control allows user to adjust the playback speed and reset the audio. This feature ensures a flexible and personalized audio experience, catering to different user preferences.

2. **Game Settings**
   User can switch between different locomotion methods, such as teleport or continuous movement, to suit their comfort level and gameplay style.

The Hand Menu is designed as an attachment to the users' hand to maximize the usability and enhance the overall VR experience. This design ensures the ease of access by making the menu always within reach. It allows user to access important functions quickly without interrupting their gameplay. In Addition, The main gameplay perspective is less affected by the hand-attached interface which ensure that users can focused on the virtual environment while the menu stays in their peripheral vision. Moreover, the Hand Menu strikes a balance between immersion and functionality by being intuitive and non-intrusive that aligning with the natural interactions expected in VR environments.

The Hand Menu was implemented using Unity, using several key technologies to ensure its functionality and responsiveness in a VR environment. First of all, the Canvas system was used to design the visual interface of the menu. This allowed the flexible layout adjustments and high-quality rendering of UI elements, such as buttons and scrollbar. Second, the logic for attaching the menu to the user's hand was developed by tracking the hand's position and orientation using VR input devices. The menu adapts dynamically to the hand gestures, guaranteeing constant accessibility. Finally, Gaze Interaction and XR Simple Interaction was employed to enable the functionality of opening the Hand Menu in the VR environment. The implementation begins with casting an invisible ray perpendicular to the surface of the Hand Menu and added a sphere in the head of the camera to detect the ray is or is not point to the sphere to implement opening menu function.

A challenge was faced when we implemented the Hand Menu. How to make the open menu function smoothly. After we implemented the hand menu, we found that the Hand Menu was not smooth enough and would open when the hand was turned to an awkward position. To solve this issue, we tested and adjusted its position in VR. Through multiple tested and adjested, we found a more natural hand position which allow the Hand Menu to be opened within a more reasonable rand. Finally, we achieved a more smooth opening experience which improved the interaction.

3.3 Audio Component

3.3.1 Steam Audio

Select Steam Audio in this project to achieve audio spatialization. The built-in audio system of Unity relies on simple stereo mixing for directional positioning of sound, lacking more precise processing, which can make players feel unreal when identifying the source of sound. Steam Audio provides HRTF (Head Related Transfer Function) technology, which can generate precise 3D sound localization effects for players, allowing them to clearly perceive the source and direction of sound in the scene.
Because the scene of this project is on an abandoned factory site, only the audio space function needs to be used.After adding Steam audio, check spatialize on the audio source component of the corresponding object and adjust the spatial blend from 0 to 1 to experience the audio spatialization effect in the scene.The related setting is shown in Figure 13.

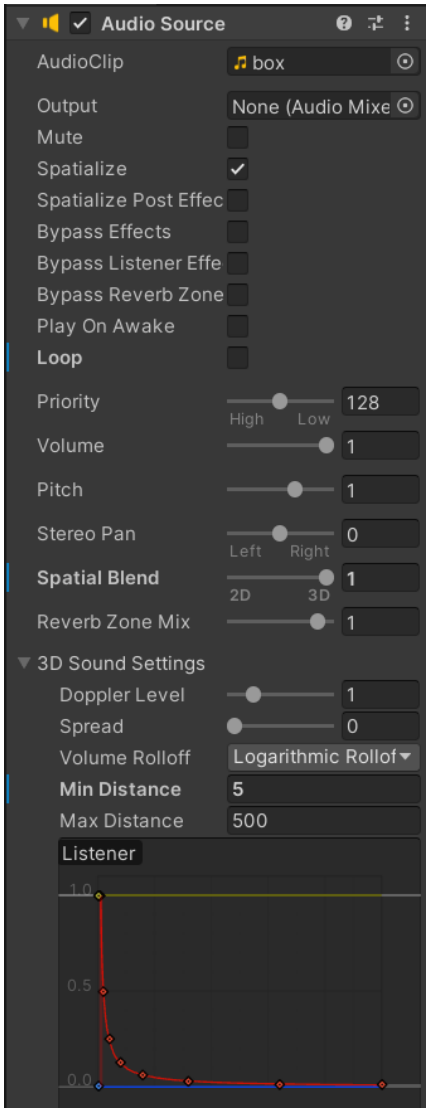


Figure 13: Audio Setting

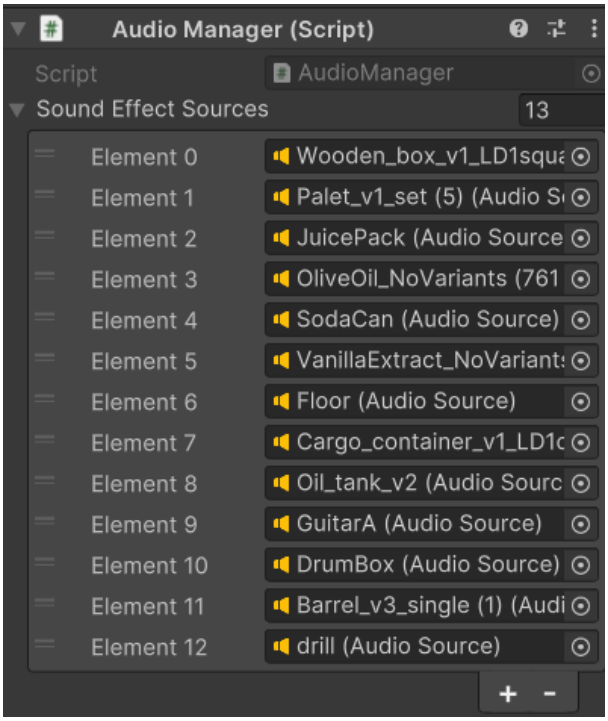


Figure 14: Audio Manger

3.3.2 Audio Manager

In the game, we designed an audio system to manage the sound of all objects. The original intention was to use this to manage all objects that produce sound, such as controlling the stopping, playing, and adjusting the speed of music. In the later stages of the project, it was discovered that the sound effects were actually played as tags for detecting struck objects. The logic behind this approach changed to the fact that the sound effects played were only emitted from the objects initially loaded into the audio manager. For example, if two objects with the same tag as Wood had their audio source dragged into the audio manger, when the second object was struck, the tag for Wood was detected and the sound was indeed played from the first object. As shown in Figure 1, the settings of the audio manger are as follows. However, because we only added spatial sound effects to objects with looping sound effects, which are unique sound effects, the unexpected was not affected, and the final performance in the game was normal. However, in future development, this part needs to be revised again to provide players with a better experience

4 Critical evaluation

After implementing the basic functionality based on the idea, we invited six of our friends and course colleagues to play our VR sound interactive game demo, and they gave us some feedback and suggestions after playing it, which let us know the strengths and weaknesses of our game. The Figure 15 shows a summary of some of the feedback that was mentioned several times or that we felt was important:

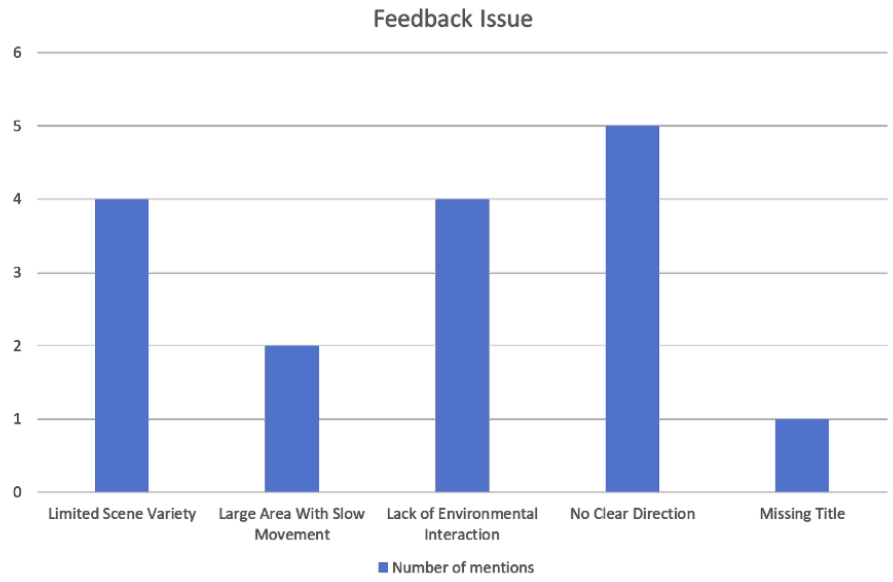


Figure 15: Feedback

4.1 Advantages

4.1.1 Sound Design

Our main goal is to enhance the immersion of the player by using a variety of spatially realistic sound effects. All players praised the sound design of our game. They felt that each different object had a unique sound and that it would become louder and smaller depending on how far the object was from them, which served to enhance immersion. This feedback suggests that the realistic sounds we recorded achieved the desired effect. With more time, the design of the sound effects could be further optimised in terms of dynamic sound effects, for example, by allowing the knocking sound to change according to the strength of the player's swings, so as to make the sound effects richer and more varied.

4.1.2 Game Mechanics Ideas

We also received positive feedback on our game mechanics from half of the players. They found it creative to have objects repeat their sounds to form a rhythm. This shows that the core mechanic of music creation can appeal to some players. If we can continue to enrich the game mechanics, such as more variable speeds or features like recording, players will be even more motivated.

4.2 Disadvantages

4.2.1 Limited Scene Variety

Four players reported that the game's scenic content was too simple, with only a few bottles, and lacked sufficient visual appeal and interactive detail. They mentioned that the overall appearance of the factory was too simple and that the number of objects and effects was not enough to entice players to explore for a long period of time. This suggests that we did not fully consider the aesthetic expectations and interactive needs of the players when designing the scenario. To improve this, we added more objects and special effects, and even buried a Star Wars-like egg to make the scene look as colorful as possible. The players have more options, and the game is more fun. These improvements enhance the immersion of the player, but in the future, dynamic effects, such as light and shadow changes or environmental animations, could be added to bring the scene to life.

4.2.2 Large Area, Slow Movement

Two players commented that the map is too large and moves too slowly. They spent a lot of time on pointless movement rather than interactive experience, which was too boring and frustrating. This issue shows that we didn't think enough about the player experience in our map design. Our original design was intended to provide players with an open space to explore, but we neglected to balance speed and exploration. To address this issue, we have accelerated player movement speed and simplified the map layout to allow them to navigate the map more quickly.

4.2.3 Lack of Environmental Interaction

Four players reported that there were too few environmental elements to interact with. They basically agreed that the game's mechanism of knocking to generate sound, and the lack of sound feedback when knocking on static objects such as floors and walls, greatly undermined the immersion of the game. This made us realise that we had previously only focused on interacting with interactive objects and had forgotten about environment objects. For this reason, we added sound effects that interact with the environment, such as the sound of floors and iron fences colliding. These sounds make the factory environment more realistic and enhance the player's immersion. If we had more time, we could have further improved the environment interaction by adding more complex effects such as object damage.

4.2.4 No Clear Direction/Guidance

All five players reported that they were unsure of their goals upon entering the game, as well as the background and mechanics of the game. Testers said the lack of clear direction left them feeling lost. One player even said directly, 'How do I know what I'm supposed to do once I enter the game when there are no instructions whatsoever?' The lack of direction seriously affected the player's experience. So we designed a simple story background for this purpose, introducing the player's identity, mission and environment in the form of letters. This narrative not only solves the problem of guidance, but also adds a sense of story to the game and enhances the player's sense of immersion. In the future, more hints can be dynamically added to the game, such as visual markers or voice guidance, to further enhance the player experience.

4.2.5 Missing Title

One player mentioned that the game lacks a catchy title and the first impression is not prominent enough. He wished the game had a unique and interesting title to better convey the game's theme. This shows the importance of the title in shaping the image and appeal of the game. For this reason, we named the game 'Rusted Rhythms' to highlight the sound creation and factory background. This change was approved by the testers. With more time, we could have innovated further on the title design, such as adding dynamic title animations or visual effects to make the game's opening more impactful.

5 Conclusion

One of the great achievements of the project was the sound design. Players appreciated the realistic, immersive sound effects, which enhanced their experience in the virtual environment. In addition, the open-world game mechanics also piqued players' interest, confirming the feasibility and appeal of the core concept.

However, the project also revealed some areas that needed improvement. The oversimplification of the scene design and the limited variety of interactive objects were common problems. The visual effects and interactivity of the environment needed to be enhanced to maintain a long-term play experience. To address these issues, we added more items, interactions, and special effects, which greatly improved the player's immersion.

Navigation and guidance were other key areas that needed improvement. The large size of the map and slow movement made players frustrated. Similarly, the lack of clear goals made players feel lost at the beginning of the game. These problems were alleviated by speeding up movement, simplifying the layout, and introducing narrative elements (such as letters) that provide context and goals. These changes were well received, but additional prompts or guidance could be added in the future.

Interaction with the environment was another obvious shortcoming. Players wanted more feedback when interacting with walls or floors, etc. Adding sound effects for environmental interactions solved some of these problems. Future work will explore advanced interactive effects, such as object damage or dynamic reactions, to enhance the realism of virtual environments.

In summary, Rusted Rhythms achieved its main goal of creating an open-world VR experience that combines music creation with interactive games in an engaging virtual environment. Although the project faced challenges in scene design, navigation, environmental interactivity, and player guidance, improvements based on user feedback significantly enhanced the overall experience. This project shows the potential of VR as a platform for creative expression. At the same time, it is very important to design and develop VR games with players at the center. In the future, we hope to create more realistic, open, and immersive VR games based on these foundations.

References

[1] Pesek, M., Hirci, N., Žniderščič, K., & Marolt, M. (2024). Enhancing music rhythmic perception and performance with a VR game. Virtual Reality, 28(2). https://doi.org/10.1007/s10055-024-01014-y

[2] Beginagain(2020).*https : //www.youtube.com/watch?v = EU_JGT55vN0*

[3] Lopez, S. M. (2020). Audio Loop Station. DigitalCommons@CalPoly. https://digitalcommons.calpoly.edu/eesp/517/

[4] Khundam, C. (2021). A study on usability and motion sickness of locomotion techniques for virtual reality. ECTI Transactions on Computer and Information Technology (ECTI-CIT), 15(3), 347-361.

[5] Justin,P,B(2021).[FREE] Oculus VR Hands Models.*https : //www.patreon.com/posts/free − oculus − vr − 46544401*

[6] Smuts, Aaron, "The Paradox of Suspense", The Stanford Encyclopedia of Philosophy (Winter 2021 Edition), Edward N. Zalta (ed.), URL =*https : //plato.stanford.edu/archives/win2021/entries/paradox − suspense/*

[7] Wikipedia contributors. "Godzilla vs. Kong — Wikipedia, The Free Encyclopedia," 2024. [Online; accessed 9-December-2024]. Available: https://en.wikipedia.org/w/index.php?title=Godzilla_vs._Kong&oldid=1258322718.