Dreaming Flight

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Abstract

We designed and created a Virtual Reality Experience for the HTC Vive in where users could experience "dreamlike flight." We showcased this project at the Annual Atlas Exposition. The project can be found on Google Drive here.

1 Introduction

One of the common recurring dreams people have is when they dream of flight. Dreams where you are flying often fall under the category of Lucid Dreams. Our goal was to recreate the sensation and excitement of the freedom that one often feels while dreaming of flight.

The main objective of our group was create an open world flying experience for the HTC Vive where a user would be able to fly around as a Chinese Dragon Kite in an "artistically rendered" world. We would allow the user to fly through the environment with the use of their head position.

2 Design

2.1 Minimal Viable Product

When we started out on this project, we decided that our bare minimum of success would be the ability to fly around an open world. At minimum we want to give our users the ability to experience exploring by flight simply by looking. We wanted users to experience the dreaming sensation of flight.

We were able to achieve this and much more. We successfully implemented an island world that users could explore. We were also able to implement a "body" for the users and motion script that allowed that body to follow the user during flight.

2.2 Creation Phase

Much of our inspiration for the design of our project came from traditional Chinese culture and landscape. The idea for our terrain came from the Tianzi Mountains in China, which are recognized throughout the world, as tourists travel to visit the "dreamlike" place.

Figure 1: A cloudy view of the Tianzi Mountains in China

With this terrain in mind, we created a mountainous island for the user to explore. By making the landscape five islands, we solved the problem of allowing a user to explore a limited size world without running into barriers.

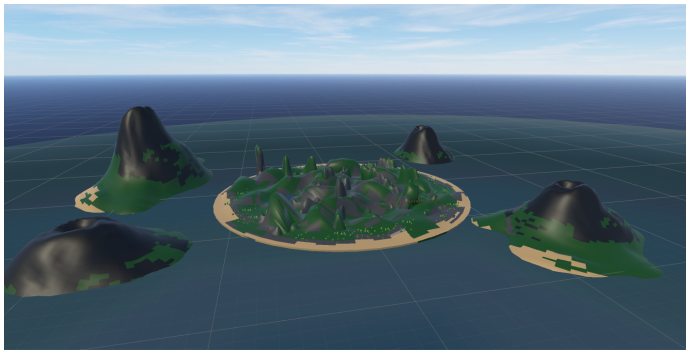

Figure 2: Our island Model loaded into unity with water and a skybox

The second part of our inspiration came from a Chinese Dragon Kite. These kites are often flown at festivals in China, and move in a very snakelike motion. We decided that the user would have a first person perspective of a dragon kite, that way they could see their tail following them, to add to the experience of having a body.

Figure 3: A traditional dragon kite often flown at festivals in China

We created the cylindrical segments in Maya and made them follow the main camera using a movement script.

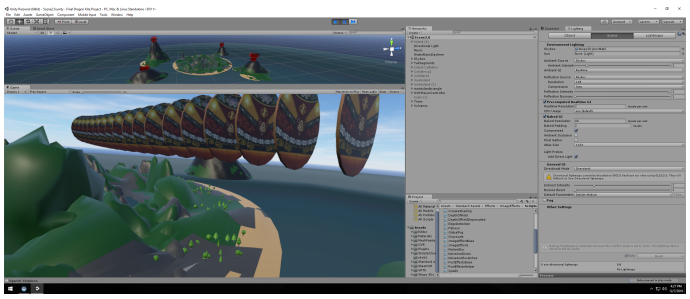

Figure 4: A screenshot of the Unity interface showing the tail following the camera.

The last thing that we did in order to give the user a sense of body was add a nose on the bottom of the screen in the first person point of view.

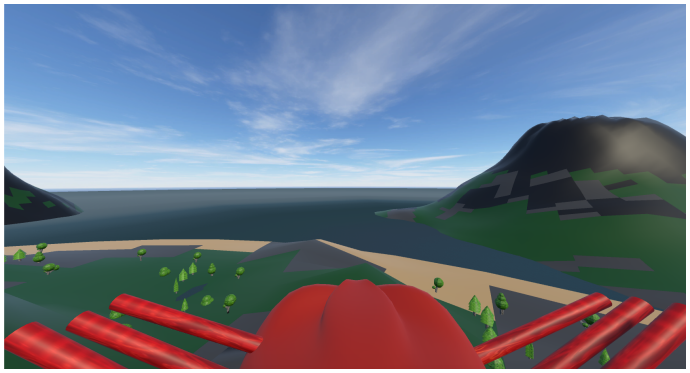

Figure 5: The view that a user would have when looking through the Vive

The last piece of inspiration we drew from Chinese culture is in the traditional Chinese music that plays during the experience. This was designed to add to the calming effect.

2.3 Unexpected Challenges

Our biggest unexpected challenge was making the colliders work between the camera and the island. For most of our project, the camera would fly through the island. We eventually caught this error, and realized it wasn't an issue in the colliders themselves, but in the Movement Script. The script was translating the camera and disregarding all of the colliders. The fix for this was by using controller.Move instead of controller.Translate in the original script.

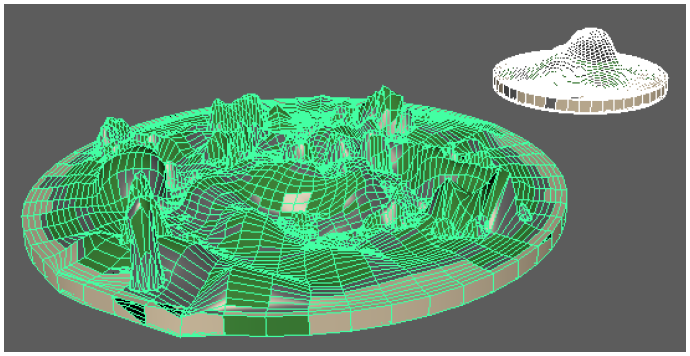

Figure 6: The terrain mesh that would act as a collider if something hit it.

2.4 Outside Assets

The only physical outside asset that we imported into our world was the modeled dragon head. The script that we used for the camera movement was adapted from controller.move in the unity manual and the camera documentation. We also used a follow script that our professor gave us to make the tail segments follow the camera. Lastly we used some Chinese music that we found on YouTube.

3 Atlas Exposition

Overall we believe that our project was a huge success at the Expo. We received a lot of great reactions and feedback from people that attended the Expo.

3.1 Common Themes

3.1.1 Suspending Disbelief

We found that as soon as our users put on the VR Headset, they almost didn't want to look around. It wasn't long before they realized they were only moving straight forward, and they

started turning their head. The look on users face when they realized that they could fly around simply by looking was gratifying. We even had trouble keeping users from tangling themselves with the Vive cord.

Figure 7: A user spins in excitement as he realizes how to fly around

3.1.2 The Ability to Alter the Experience

The original goal of our project was to create a calming and dreamlike experience. We believe that we achieved this goal based on users reactions. We discovered that, by manipulating the speed of the dragon, we could manipulate the user's experience. When we turned that speed up, users had a very enjoyable experience where they moved faster and laughed as the dodged around the terrain.

Figure 8: A user experiencing an increase in flight speed

3.2 Feedback

A lot of the feedback that we received from users was their desire to explore more. A lot of users flew toward the volcano hoping to catch fire or be able to fly all the way into the Volcano. They also attempted to fly into the water to see what would happen.

4 Reflection

Overall we are very happy with the way our project turned out. We believe that we were able to achieve our main goal of allowing users experience a lucid dreamlike feeling of flying.

Going forward with our project, in order to better immerse our users in our ultimate goal, we would take our user feedback and add more elements to our project. The original idea of fog and clouds would add to mystic feeling that users were in a dream. Another thing we would like to do is add more the world to explore. Our users really enjoyed the openness of our world, but wanted to see more things happen when they did intuitive things. After all, we believe that the best Virtual Reality experience are both intuitive and immerse. Even with all of the improvements we would like to make, we feel like we captured this well enough to give our users the freedom of flight.