

VR Environment in Unreal Engine 4

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1. Introduction

Using VR technology in computer games is becoming more and more popular with time. Having a fundamental understanding of the development process of VR games has thus become beneficial for game developers. The goal with this project was to use state of the art game development tools to implement a visual impressive VR environment.

2. Resources and Tools

The VR environment was implemented in Unreal Engine 4 in the latest version 4.19.2. The asset package used in this project is available for free on the Unreal Marketplace with the name *Infinity blade: Grass lands*. The HMD used for this project was a HTC Vive with motion controllers.

3. Implementation

The first step of the project was to make sure that the hardware, namely the HMD device, worked as expected within the game engine. By default Unreal Engine 4 includes VR sample scenes where developers can test positional and rotational tracking of the HMD. Also teleporting larger distances using the triggers on the motion controllers. At the start of the project I had limited

access to the computer lab and thus could not use the HTC Vive during implementation. But since the project consisted of creating an environment this did not prove to be a problem. Implementation of the scenery started with the main plaza with the two statues. This was designed to be an open space where the player can familiarize themselves with the controls. From the plaza the player also has a good view of the surrounding ocean and can conduct that he or she is currently located on an island. Turning around the player will see a small castle with a wooden gate. This will intrigue the player and motivate them to move towards it. Upon reaching it they will notice that the gate is closed. However, right in front of the gate is a crossroad. The player can either move to the right onto the collapsed bridge or move left to the gardens. The two areas were created to be a contrast to each other. The collapsed bridge was designed to frighten the player who walks upon it, while the gardens is meant to give off a soothing feeling. Certain objects like grass, flowers, leaves and plants have a slow moving animation applied to them to give off a more organic and life like look. In the gardens the player can also find interactable objects in form of apples. The apples are rigid bodies that can be grabbed and picked up. When grabbed the physics of the object is turned off and the object is instead made as a child to the

motion controller. This will result in the apple following the motion controllers transformations. Once released the physics are turned on again and the current velocity upon released is used to drive the physics. This means that the player can pick up the apples and then throw them, or even juggle them.

4. Additional Resources

Video preview: <https://youtu.be/NuErh5h7mmA>
Length: 2:43 min

Project download link:
https://www.dropbox.com/s/i9m64cxk3dikmaq/EE267_SvenVR.zip?dl=1
Size: 347 Mb, requires Unreal Engine 4.19.2 installed.

