Module 3.0

Mini Project

Introduction

In previous modules we leveraged existing online tutorials, augmenting and adding to them to get familiar with Unity and SteamVR. In this module, you'll do the same by creating a "miniproject" in advance of your semester project. You may search the internet for a Unity and/or SteamVR tutorial that provides a starting point and/or demonstrates some fundamental functionality that your interested in learning about. Otherwise, it is up to you and your partner to decide on the nature of the miniproject.

Each partnership (pair) should consist of one CSE student and one New Media student (if possible). Ultimately, you'll give a mini presentation to the rest of the class. This is an informal presentation of your project and your opportunity to show off your skills and creativity. You will also make your code and assets available to the rest of the class if they wish to incorporate or adapt them as part of their larger project. We may also collect them in a miniproject showcase as part of the class as in previous years.

The intention is that by the end of this module we'll have several pairs of individuals with more specialized knowledge about some aspect of Unity/SteamVR that can then be used in the larger projects. The expectation is that each student becomes a resource that all other students can go to for help on that particular functionality/feature. Because of this, you will need to get your miniproject's scope approved by the instructors to ensure that not too many pairs are doing the same or similar things.

Some suggestions:

- Explore how to create and utilize a user interface (menus, user settings, etc.) in VR. One such resource:
  https://unity3d.com/learn/tutorials/topics/virtual-reality/user-interfaces-vr
- Explore raycasting (essential for many game mechanics):
  https://unity3d.com/learn/tutorials/topics/physics/raycasting

- Find an existing open source Unity game (or go through one of their other tutorials at https://unity3d.com/learn/tutorials such as the space shooter, tanks, or survival shooter games) and adapt it to utilize SteamVR (user inputs, game mechanics and user interfaces may need to be altered).
- Explore multiplayer networked gaming in Unity:
  https://unity3d.com/learn/tutorials/topics/multiplayer-networking
  Full documentation: https://docs.unity3d.com/Manual/UNetOverview.html
- Use some (free) photogrammetry software (such as Autodesk Remake) to virtualize a real environment (similar to Valve's Destinations, though using Destinations directly requires knowledge of Lua which would be beyond the scope of this course).
- Build and integrate code from a library into an existing application to show case its functionality. For example, the parabolic teleportation library or VRTK.
- Create a "voxel art" paint program that allows people to "paint" using voxels (allowing them to change colors, delete/group voxels, save, etc.)
- You are highly encouraged to find and explore something else that piques your interest.