

COSC 729: Virtual Reality and its Applications
Spring Semester 2020

Instructor: Dr. Sharad Sharma

Assignment 4: VR University Campus Module for emergency response

This project is meant to familiarize you with the Unity 3D game engine. This assignment will get you prepared for the final project.

Please submit your assignment by: **3/11/2020**

Submission:

Submit your code files and all scene assets in the SHARMASHARE directory on the network.
[:\SSharma Share\COSC729-Submissions\Assignment4]

Description:

In this project you will create a **VR University Campus** environment. You are expected to create a virtual environment of university campus through the use of 3D Studio Max models, and/or sketch up models and Unity 3D game engine. You will be required to do the following:

1) Create the terrain and 3d models. [20 points]

Start off by using the terrain editing and texture painting tools to create the terrain for your Scene. In painting (and editing) the terrain, consider using variety in your Scene, both to give the Scene a more realistic feel (i.e. the outdoors is nothing if not irregular), and to show signs of human or animal life (e.g. paths, more regular town areas, open areas in woods, etc.)

Some possible ideas:

- Add terrain, trees, foliage, etc.
- Add 3D models from the freely available online asset packages.
- Create a distinct or more interesting structure like a tower, a building, etc.

2) Add a Player Controller to the Scene. [10 points]

The game needs a player view camera and a controller (that moves by player's control) to enable the player to interact with the game. As discussed in class, add a player controller to the Scene. I recommend the First Person Controller for your first Scene, but you're certainly welcome to experiment with the 3rd Person Controller, if desired.

3) Add other characters in the environment [10 points]

The environment should contain at least 12+ agents with pre-existing animations (paths). The animations can be in a loop.

4) Add environmental assets to your Scene. [5 points]

Add water. It is exceedingly rare in nature to encounter completely barren terrain, so add some environmental assets to your Scene to give the terrain more character (more "life"), such as trees, grass, bushes, rocks, water, etc.

5) Add 3D models to the scene and create/save the scene file [5 points]

In many VR environments, the terrain and natural environment start to "set the stage", but it's generally the 3D models, such as buildings, vehicles, and other objects the player interacts with,

that are the major focal points for the user's attention. As such, start adding some 3D Models to your Scene.

There are very few (if any) 3D models in the Standard Assets that come with Unity Basic, and there's only a couple of buildings and a few small objects in the book's asset package, so I encourage you to look at the free assets available in Unity's Asset Store (which can be accessed from within Unity via **Window** → **Asset Store**). Again, when selecting 3D models for your Scene, consider the theme, setting, and/or purpose of your Scene. Try to find models that match with the desired theme/setting.

6) Add Audio to the Scene. [5 points]

You can add water splashing sounds and other sounds as needed in the environment.

7) Create an opponent or obstacles with health counter (behavior). [30 points]

Create fire and smoke.

Include a *health counter*. When the first person controller comes near the obstacle (agent or other obstacles or fire), it will lose its health.

8) Create an evacuation drill [10 points]

Use a trigger (button, key press, mouse etc.) to start the evacuation. All the agents in the environment should move to an assigned goal (safe zone) or goals.

9) Creativity: Create a compelling environment. [5 points]