

COSC 729: Virtual Reality and its Applications  
**Spring Semester 2020**  
**Instructor: Dr. Sharad Sharma**  
**Assignment 2: VR Course Curriculum Module**

This project will span a period of 2 weeks and is meant to familiarize you with the WorldViz Vizard IDE. This assignment will get you prepared for the final project.

Please submit your assignment by: **2/26/2020**

**Submission:**

Submit your code files and all scene assets in a single zipped file (as a \*.zip) and submit the file on blackboard. Example: **Assignment\_02\_sharma.zip**

**Description:**

In this assignment you will create a **VR course module** environment. You are expected to create an entire virtual environment that combines 3D Studio Max models and WorldViz Vizard coding. The goal of this assignment is to create course curriculum module for computer science and mathematics students. The aim is to create Virtual Reality course curriculum module with more inquiry based problem-solving activities and hand-on experiences based on Virtual Reality. You have to create a VR course curriculum from the below 2 options (choose one)

1. VR course curriculum module for addressing Cybersecurity risk-based decision-making.
2. VR course curriculum module for teaching Data Science concepts.

The module should be able to clear the concepts of the topic and could be used by the instructor as a supplement while teaching the class/course. The module should have two modes:

1. *Tutorial mode*: to teach the concepts to the audience
2. *Interaction mode*: to interact with the developed environment to learn a concept. Or play an interactive game in VR to learn the concept.
3. *Feedback Mode*: (will be expanded in assignment 3)

You will be required to do the following:

1. **Modeling**: (using google sketch or 3Ds Max)
  - a. You have to use freely available 3D models over the internet.  
You have to import Assignment1: Greek temple from 3ds Max  
You have to use models from Sketch up
  - b. At least 12 **UNIQUE** models
    - i. Must be different models (trees, streets, cars, etc.)
    - ii. You can use simple animations in Max or in Vizard
  - c. Export your model from 3D Studio Max into Vizard using the OSG/IVE exporter.
2. **Programming**:
  - a. Add grabbing option for assembly structure modelled earlier  
refer: C:\Program Files\WorldViz\Vizard6\examples\vizconnect\grabber\grabber\_subparts.py  
C:\Program Files\WorldViz\Vizard6\examples\collaboration\toolGrabber.py
  - b. Add atleast ten avatars in the environment
    - Utilize keyboard or mouse callbacks to control the movement of the avatars.

c. Add time counter or add *score*

Refer: Use the mouse to aim and fire a ball/dart at the active shooter

C:\Program Files\WorldViz\Vizard6\examples\duckcourt

d. Add multiple windows

Refer C:\Program Files\WorldViz\Vizard6\tutorials\views

e. Add a sky with environmental map, add audio file

Refer: C:\Program Files\WorldViz\Vizard6\tutorials\multimedia

3. **Artificial Intelligence:** Create a user navigation (*mouse or keyboard*) with collision detection

a. Animate the viewpoint: Use keys to move the viewpoint to a different location (refer C:\Program Files\WorldViz\Vizard6\examples\viewAnimate)

b. Add at least two **proximity sensors**: Refer: C:\Program Files\WorldViz\Vizard6\tutorials\proximitySensors)

c. Add Graphical User Interface

Refer: C:\Program Files\WorldViz\Vizard6\examples\graphicalUserInterfaces

C:\Program Files\WorldViz\Vizard6\examples\animationPaths/

d. Click an agent (or object): Add text or any relevant description for agents when clicked. (Refer; C:\Program Files\WorldViz\Vizard6\tutorials\picking)

## Reference

Check course modules at the VR Lab link: <http://cs.bowiestate.edu/sharad/vrlab/course.html>