

COSC 729: Virtual Reality and its Applications  
**Spring Semester 2019**  
**Instructor: Dr. Sharad Sharma**  
**Assignment 2**

**Transportation safety in a VR city**

This project is meant to familiarize you with the WorldViz Vizard IDE. This assignment will get you prepared for the final project.

Due Date: **2/20/2019**

**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 project you will create a **VR City** environment. You are expected to create an entire virtual environment that combines 3D Studio Max models, sketch up models, and WorldViz Vizard coding. You will be required to do the following:

1. **Modeling:** Create a Virtual City for navigating a car
  - a. You have to use freely available 3D models over the internet.  
You have to import Assignment1: Adding crowd in a city center from 3ds Max  
You have to use models from Sketch up  
You must include cars, school buses, fire trucks on the road.
  - 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. You must create an assembly structure (building, playground, chess board, etc.)
  - e. Export your model from 3D Studio Max into Vizard using the OSG/IVE exporter.
2. **Programming:** The VR City should comprise of
  - 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 active shooter in the city and add *score* (or no. of times the car hits the objects)  
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 controlled *car navigation (with mouse or keyboard)* and *collision detection* for navigation.
  - a. Animate the viewpoint: Use keys to move the viewpoint to a different location (refer C:\Program Files\WorldViz\Vizard6\examples\viewAnimate)
  - b. Add atleast two **proximity sensors**: Refer: C:\Program Files\WorldViz\Vizard6\tutorials\proximitySensors)

**Extra Credit:** Create emergency response system for the VR city and comment the code for its implementation.