Traffic Stop for Law Enforcement

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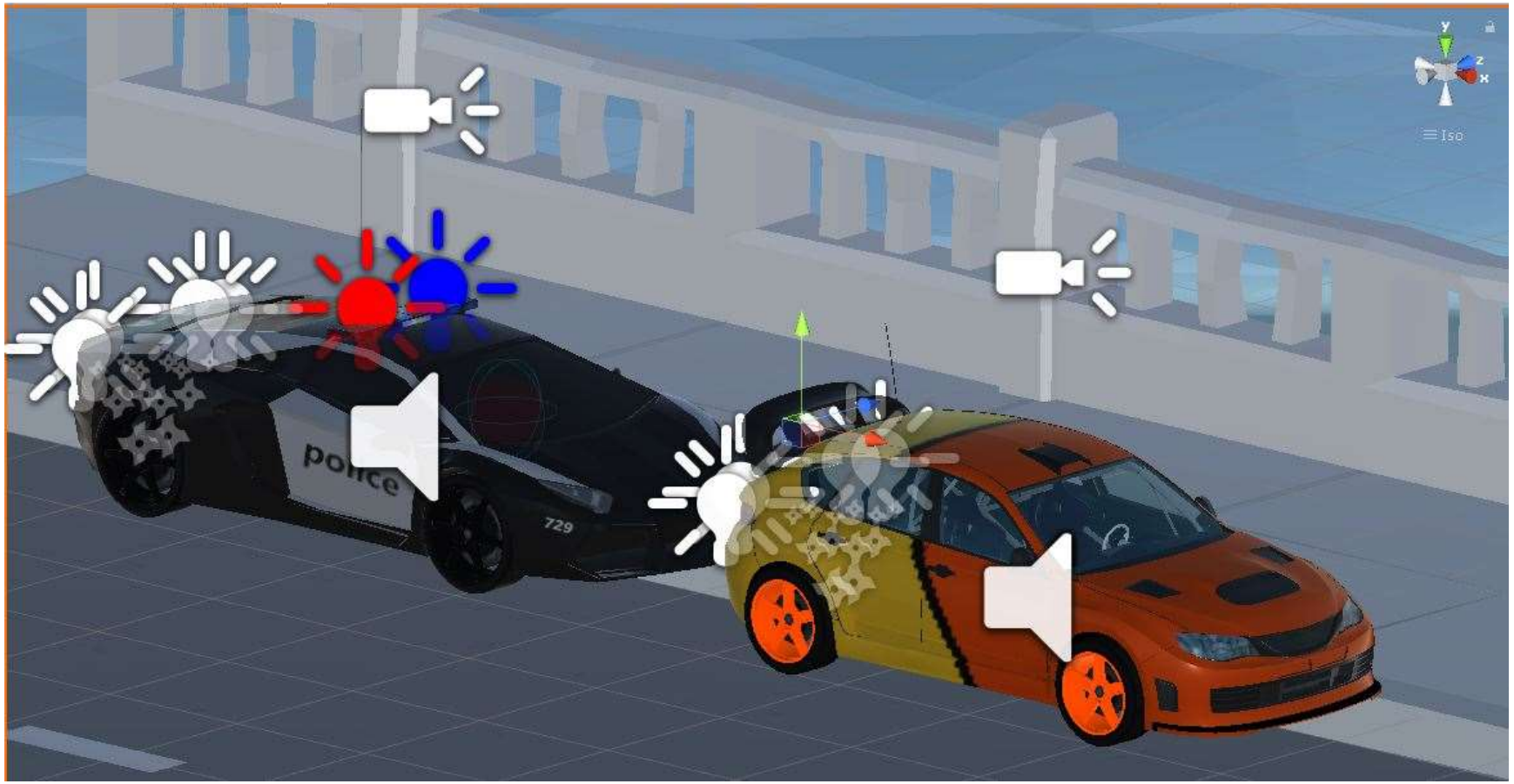
COSC 729 – Spring 2021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Goal and Objective

The project is a simulation of a law enforcement traffic stop from the driver and occupants' point of view.

It encourages the user to experience the event first hand and to make decisions that may escalate or de-escalate the situation.

Why Virtual Reality?

- Traffic stops are a routine operation of law enforcement. Most common interactions between a police officer and a civilian. Traffic stops are highly risky due to the uniqueness of each situation. A stop initiated for a simple reason may quickly escalate to a life and death situation.
- This virtual reality simulation is developed to assist drivers and law enforcement with current traffic procedures.
- Leverages the futuristic capabilities of immersive virtual reality experiences.
- Education and Training.
- Legal adjudication.
- Entertainment.

Modeling and Environment

- The envisioned virtual environment would a realistic replication of street or highway roads, including other drivers, pedestrians, traffic signs and buildings.
- The environment would include a health bar and onscreen instructions for the user.

Environment

Graphic User Interface

Functionality

- **Vision**: Use of textures and 3D models to provide detailed information.
- **Sound**: Use of speech and ambient sounds to help provide information.
- **Animation**: Use of at least three animated objects.
- **Interactivity**: Use of at least three user-triggered events.
- **Sensors**: Use at least three different types of sensors (Proximity, Colliders).
- **Avatars**: Use of custom and inbuilt avatars.

Functionality - Interactivity

- Built on Unity3D functionality
- User will be driving a car in a First Person Point of View (FPPOV)
- User will navigate with mouse and WASD buttons on keyboard
- Information and instructions would be displayed onscreen
- User would encounter and avoid road hazards and traffic signs or loose health
- User would encounter law enforcement and ordered to stop
- Subsequent onscreen instructions would instruct user to make choices
- User choice would determine good or bad outcome of the encounter
- Good encounter would allow user to continue
- Bad encounter would result in loss of life or death

Functionality - Sound

- Background/ambient sound – City traffic audio attached to main camera
- Car sound – Engine, Police Siren, Crash, Tires Screech
- Law enforcement voice over commands (NI)
- Use of player and law enforcement voice to provide interaction (male or female?) (NI)
- Use of gunshot sound (NI)

Functionality - Animation

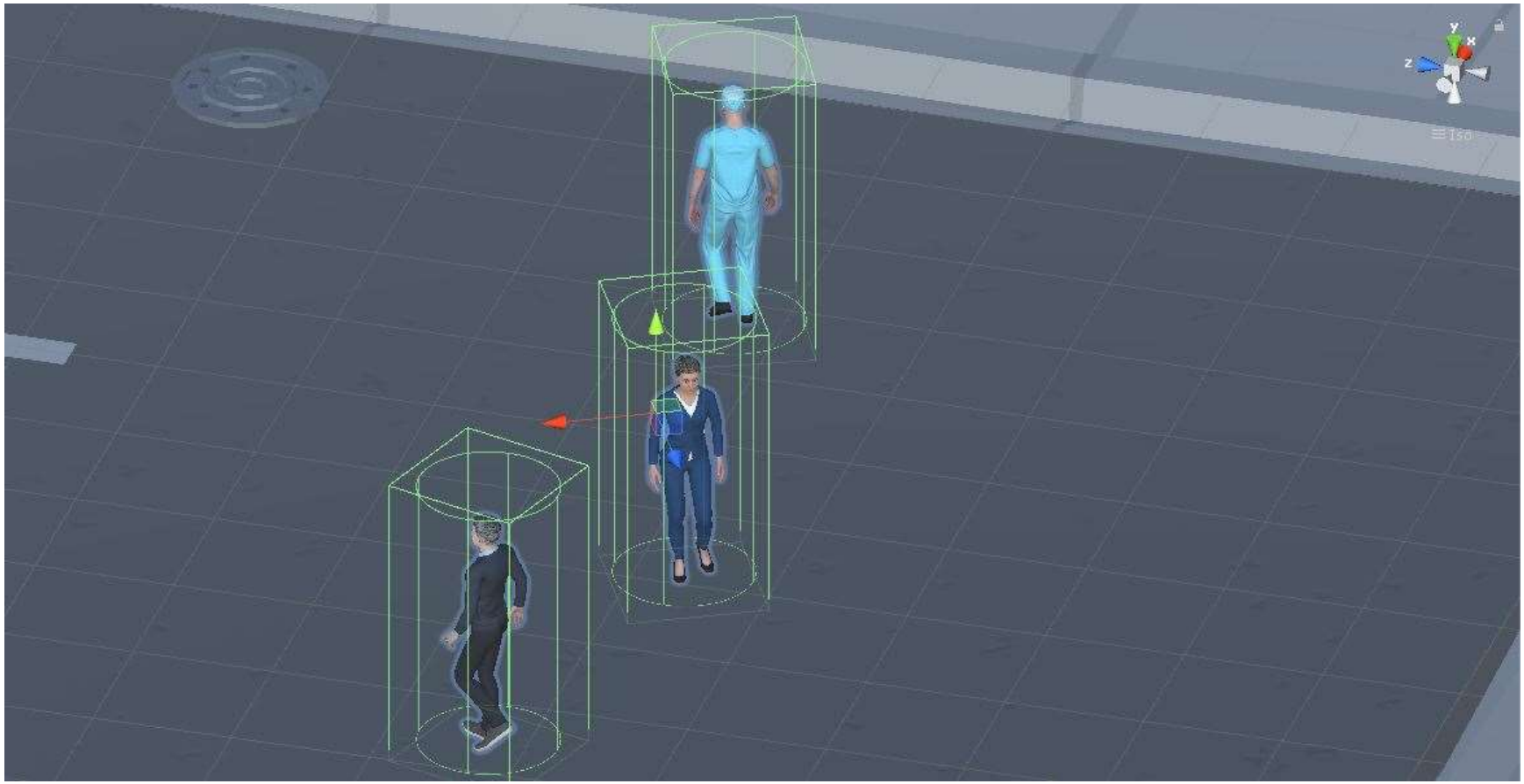
- Animated Avatars – 500 autonomous avatars
- Animated Cars
- Animated Car Lights
- Animated Speedometer
- Animated Camera Views

500 Avatars

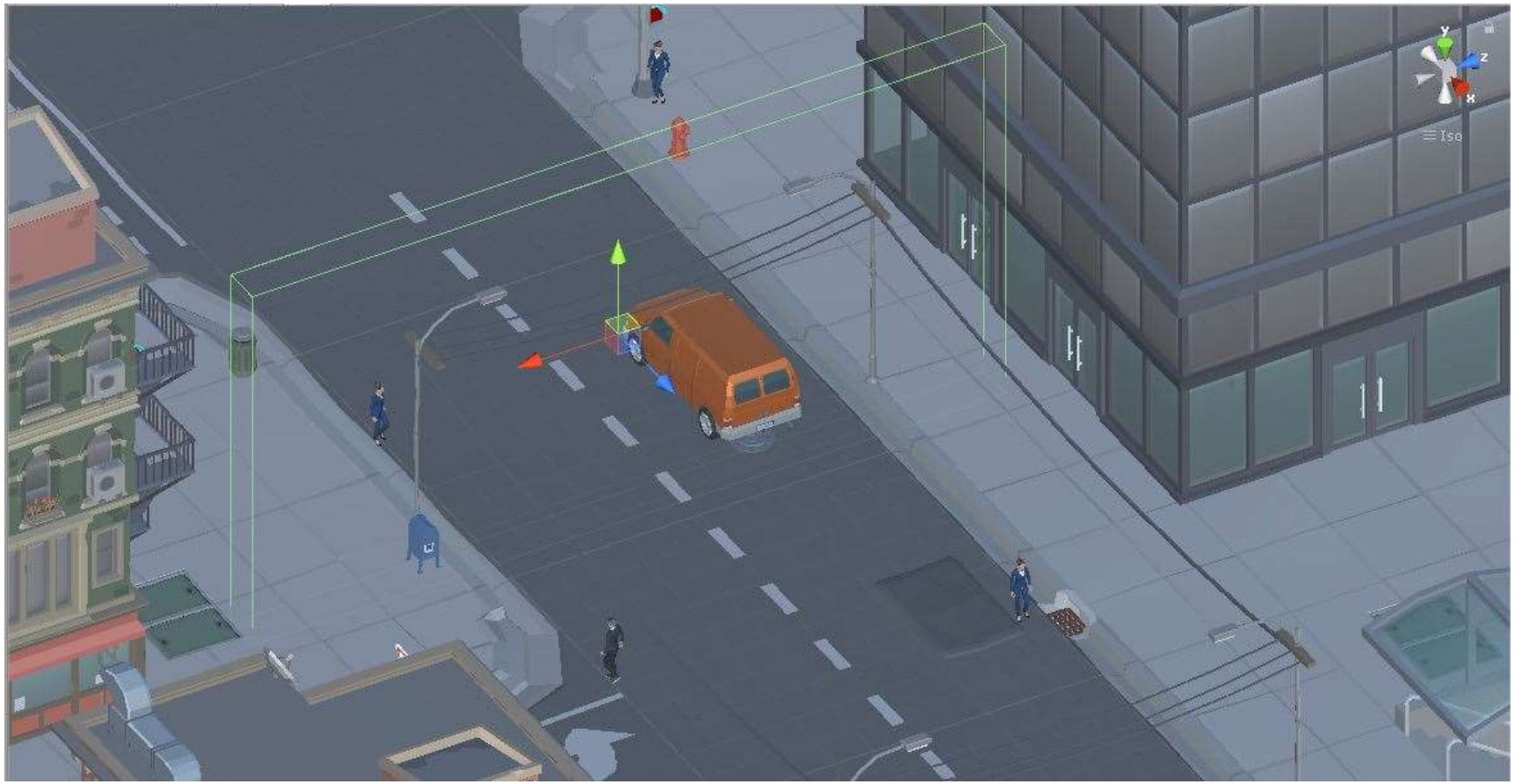
Functionality - Sensors

- Proximity sensors to monitor distance between other drivers and pedestrians
- Proximity sensors to trigger police chase

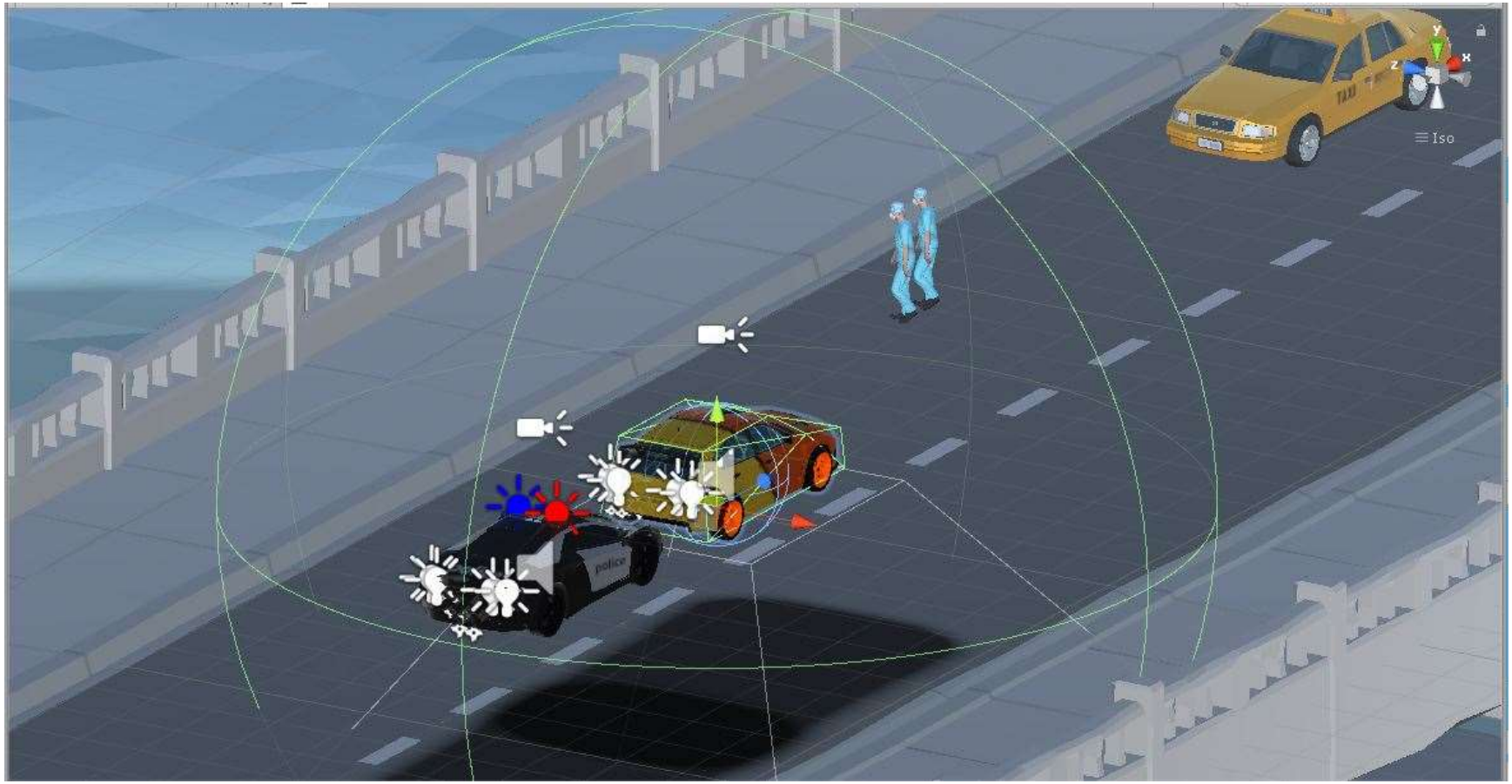
Avatar Sensors



Police Chase Sensors



Police Shoot Sensor



3D Model Asset Sources

Advantageous use of pre-existing geometry and textures.

- Online 3D Database – TurboSquid, 3D Warehouse, Unity Asset Store, CG Trader

Other Asset Sources

- Sound (Royalty free) – Zapsplat, BBC, FreeSFX, Freesound
- Animation (Royalty free) – Mixamo

Roles and Management Plan

- Victor Ngoubayo – Programming, 3D Models, Sound
- Swetha Thodupunori – Programming, 3D Models, Lights
- Prince Ikegwuono – Programming, 3D Models, Animation

To Do List

- Police car chase
- Player run away and police foot chase
- Police open fire
- Police interview / interaction
- Game Welcome and Game Over screen
- Traffic Light System

THANK YOU ☺!