

### **1. Propose an interactive experience that you want to create.**

- We created the experience of driving a car down a rainy and foggy street of a city. It is between a game/interactive art. (Comeback.) We implemented driving controls like forward/backward and turning left/right. The goal is we want you to feel the experience of driving a car down a rainy road.

### **2. Design how the user will interact with the objects in your interactive experience.**

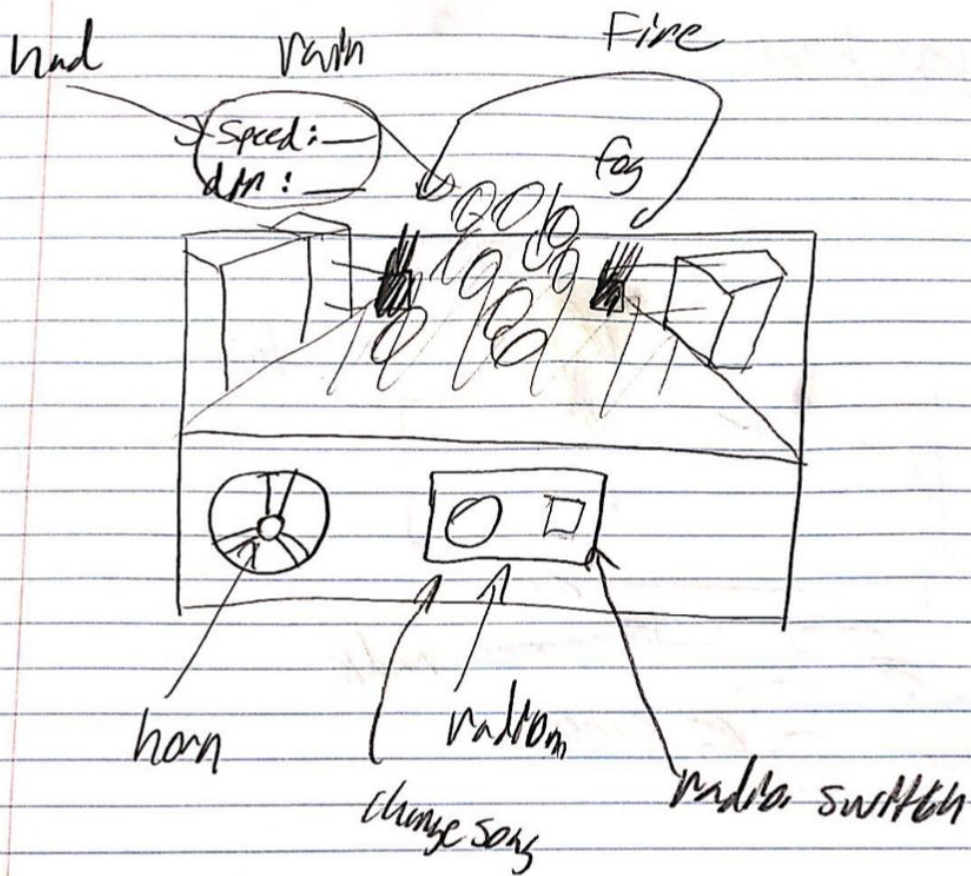
- The user can interact with multiple objects. The user is able to interact with the car by using the keys W and S. These keys move the car in forward direction or backwards. The sounds indicate to the user that the car is moving. The user also interacts with the horn, which outputs a horn sound. The interaction happens when the user clicks the horn with the cursor, which is the black circle inside the bigger circle, which represents the wheel. Then there is the radio that can interact in 2 ways. The circle shape of the radio changes the sound that is currently playing on the web browser. This circle of the radio is interacted by clicking on it. Clicking the radio button changes the audio playing, which signifies that has been pressed. The last interactable object is the square button over the radio, which turns the audio playing on or off. It is interacted by the user by clicking the red button, with the the cursor. The visual feedback to the user is the switching of colors of the button from red to green (when the radio is turned on) and green to red (when the radio is turned off).

### **3. Design how your world will look like.**

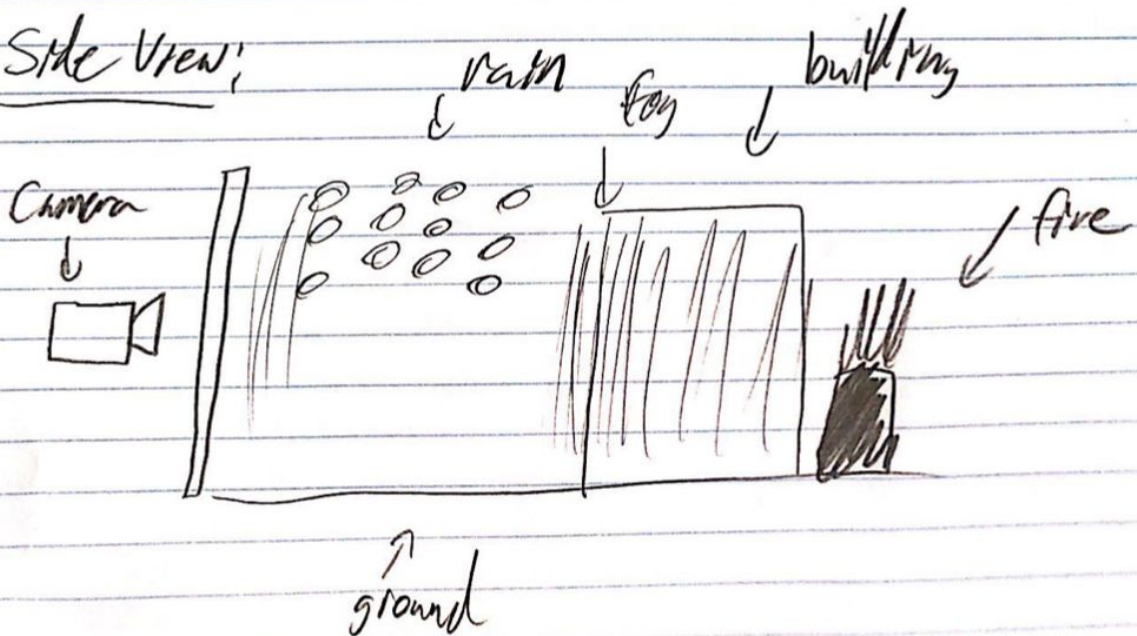
- The visual style of the world is realistic. The world we want to create a realistic world of someone driving down a road a dark and foggy road. I guess a visual reference would be the fogginess and quietness of Silent Hill and the setting is similar to Sin City where all the buildings are black and dingy.
- In order to get this look, we need to implement rain and fog to get the kind of Silent Hill quiet aesthetic.

### **4. Find 2 computer graphics techniques per team member to implement the interactivity and visuals you proposed. Here is a list of technique examples:**

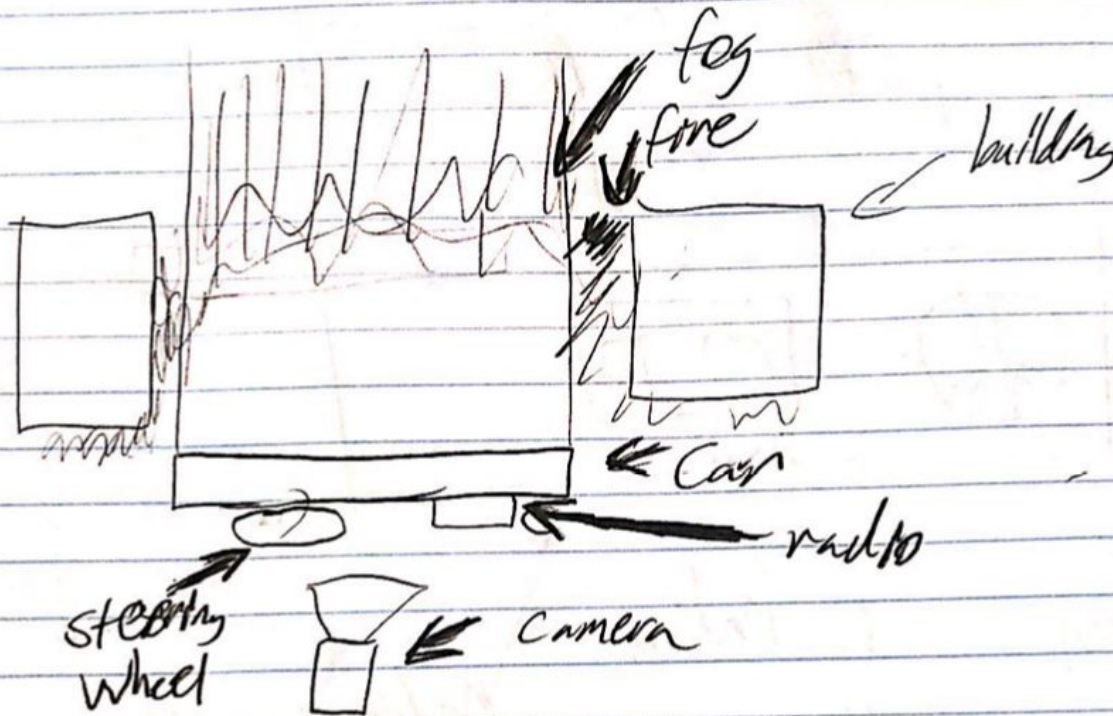
Front View:



Side View:



Top View:



Computer Graphics Advanced Techniques:

- **Heads Up Display (HUD):**

- Head Up Display is used to show the speed of how fast the vehicle is going. The speed goes up linearly from 0 to some maximum speed. The number counter that counts up the speed of how fast the car is going to be either on the bottom or top corners, which is out of the way of line of sight. The HUD will also display the direction of where the car is facing. Like the directions can be N, E, S, W, NW, or etc.. This can also be on the opposite side of where the speed of the vehicle is located.

- **Atmospheric Fog:**

- The fog is used in this program to kind of give the illusion of a bigger world than there actually is. The fog is going to be thick enough, so that you won't be able to see the end of the world, but the fog won't be so thick that you don't know where you're going. The fog also impacts the fire. The fire is visible from further distance than the surround world.S

- **Rain:**

- The rain is used to set the tone of the environment. The rain goes over the whole world.

- **Fire Effects:**

- The fire effect is used in the program to better navigate the world. Throughout the world, we want to place little bonfires that use this fire effect to help guide the player on where they want to go. Since, the program is going to be foggy and dark, we want to have some light, so the user can have an idea of where to drive. The fires are on the side of the road and there are 2 on either side of the road, so the user knows to drive in between both the fires. Also, the fire effects give the aesthetic of a world like Sin City, where the city is very dingy and dangerous, hence the dumpster fires on the side of the road.

- **Other Things to Get Down:**

- Need to put in better textures for the wheel, buildings, and radio.
  - Need to implement the interactions for the radio and horn like the audio and other things.
  - Need to get the headlights working.
  - Need to create the map of the buildings for the car to drive through.
  - Need to fix the transformations of the car like going forward and turning.

#### How to Interact:

- For the program right now:
  - If you click the yellow circle on the dashboard, a message come up saying honk.
  - If you click the orange circle on the radio, it will also put up a message saying that the "audio is changed".
  - If you click the red square, it will also put up a message saying that the "radio is turned on".
  - Those are the features so far. In the next week a number of other interactions will be implemented.

#### **Advanced feature done by members**

#### **HUD:**

- The HUD is relatively the same as was previously planned. The HUD is another canvas that covers around half the screen. The HUD shows the speed (0, 20, 35, 44, 60 mph) that the car is currently going at and the direction (North, South) of which the car is headed in currently. If it is not headed in any specific direction, it is N/A. Also, the HUD flashes a warning at the top, when the car is outside of the world.
- How it works?:
  - The hud works by setting up another canvas that overlays the top canvas.
  - I have a function within my code that sets up this canvas with its own requestAnimationFrame ticker that updates along with the other canvas.
  - The inputHandler object is fed into the hudSetup function, so the hud canvas can update the eye's speed and the sign, which affects the direction value on the hud.
  - The position of the eye from the inputHandler Object also changes the splash warning that comes up if the car is too far in the beginning or the end.

### **Fog:**

- Fog also functions relatively the same as was previously planned but there are a couple of differences. The fog works as a way to make the world seem a little bit bigger than the world actually is. I used my fog shader on the ground and the buildings, so the fog looks more uniform and full. Also, I made the fog affect the fire effects differently than the buildings and the ground. This was to enhance the fire effect, because in real life, fire can still pierce through the thick fog much stronger than some random dark building.
- How it works?:
  - The fog is implemented simply with the fog shader that is provided in the book.
  - The same fog shader affects the buildings, the road, and the trash cans. The ranges for all of these objects for when the fog begins and ends is the same; however, there is a different fog shader for the fire. The visibility range for the fire is much higher than the rest of the other shapes given that fire effect should push through the fog much greater than the other objects.

### **Fire Effect:**

- Fire effects works the same way as planned. I modified the shader to have perspective.
- How it works?:
  - Fire implementation consists of bunch of cube moving up and down.

- These cubes have boundaries and specific color.
- Lighter colors are at the bottom and darker colors are at the top to simulate a real fire. They do not cross over the boundaries.
- Fires are placed on both sides of the road.

#### **Rain (Water Effect/Particle System):**

- We originally wanted to do shadow instead of rain. But we realized that the use of rain would work much better for what we are trying to achieve. Rain sets the tone of the world.
- How it works?
  - Rain implementation consists of cubes coming down at random speed within the range.
  - There is cubes on every block of the map.
  - There is also rain sound added when you press m to make it appear realistic.
  - Rain surrounds the whole map.