Team : Yujin Ki, Alisha Brenholt, Seyeon Park, Roshan Atluri, Auden Garrard, Nitin Polavarapu

5. Prototype

This prototype will show functionalities of crash detecting pressure sensor, automatic braking, object highlighting and alert sound when it comes to activating condition, 360 camera sensor view, and enabling/disabling gearbox shifting.

5.1 How to Run Prototype

To run the prototype, click the link below and follow the instruction. PC or laptop with keyboard and monitor is required to interact with the prototype.

Prototype link : https://alishabrenholt.github.io/870PrototypeBuild/

5.2 Sample Scenarios

Figure 1 Initial screen of prototype

Once you put the car in reverse by pressing s key in the keyboard, you will be able to see 360 camera's view on the top left of the screen and back camera view on the bottom left of the screen.

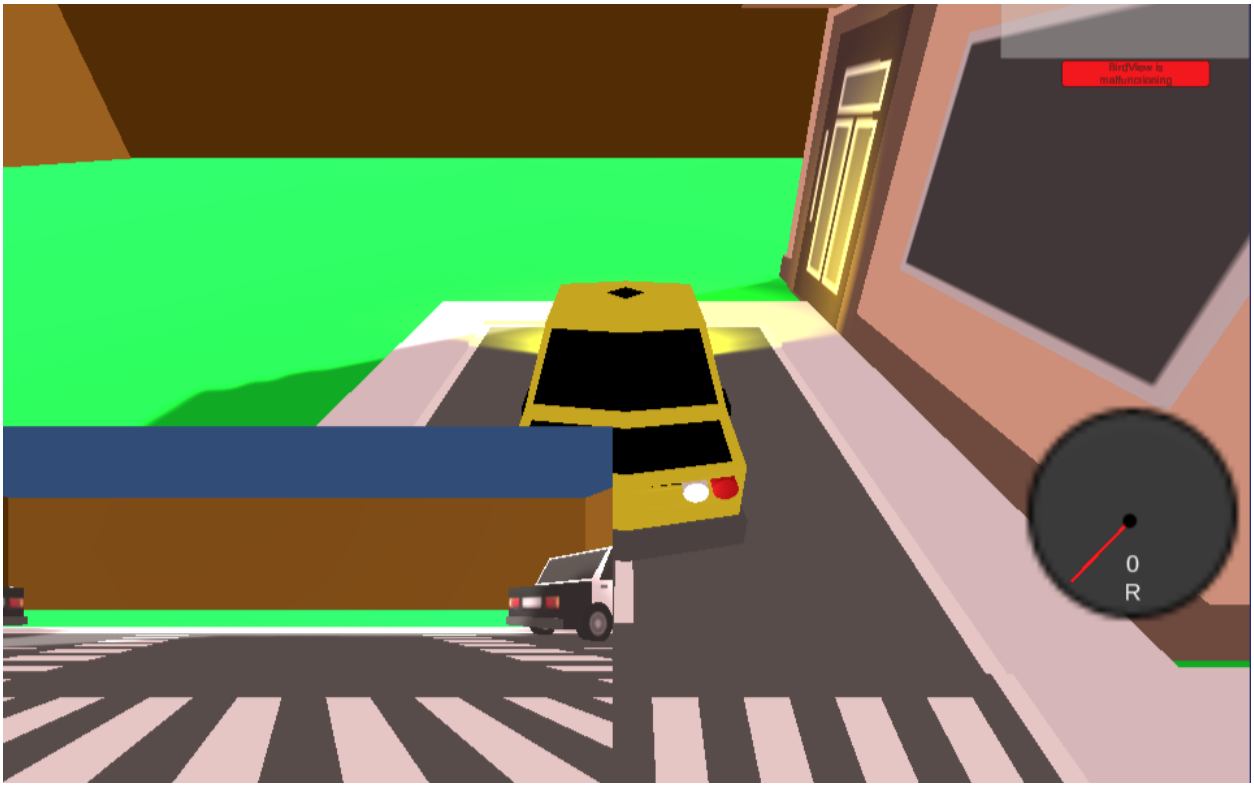

Figure 2 360-Camera malfunctioning

When the 360-camera sensor malfunction, the central controller deactivate 360 camera view on car display. You can change the status of 360 camera sensor to malfunctioning by pressing the green button on the top right of the screen. The button's color change to red and the button is now saying 'BirdView is malfunctioning'. You can see the 360-camera view display on the top left of the screen does not exist anymore in this status.

Figure 3 When the object is within 3~6 feet

When the car is getting closer than 6 feet to objects by going reverse(pressing s key), beeping alert will be on. This is showing how the sound alert will be on when the car and the objects are within 6 feet while reversing. It will be 45dB in real life but it is quieter than 45dB in prototype.

When the car is getting closer than 6 feet to objects by going reverse(pressing s key), you can see the object is changing color to yellow. In this Figure 3, the police car behind our car changed its color to yellow. This is showing that in final production of the system, boxes in the car display that surround each object will change the color to yellow in the same condition(objects are within 3 feet to 6 feet from the most extruded part of the car).

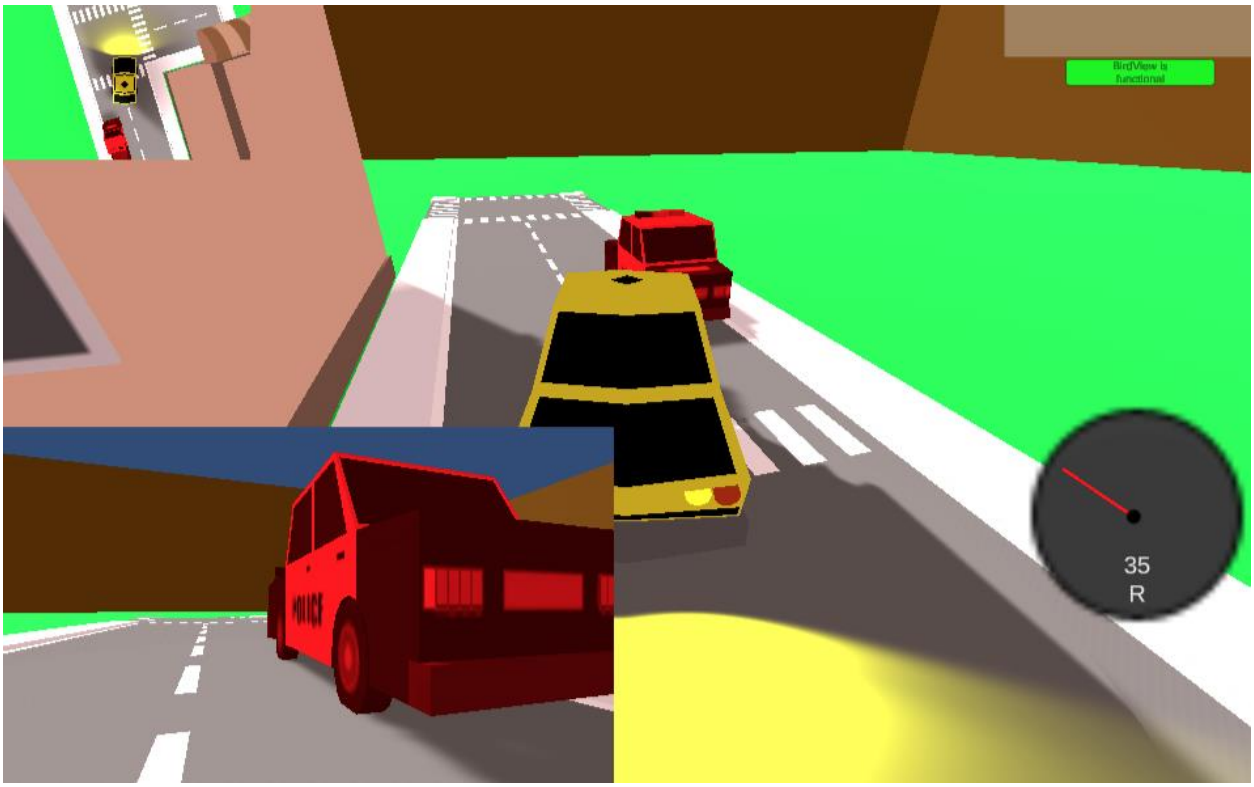

Figure 4 When the object is within 3 feet

When the car is getting closer than 3 feet to objects while going in reverse, the objects will change their color to red. You can see it This is showing that in final production of the system, boxes in the car display that surround each object will change the color from yellow to red in the same condition(objects are within 3 feet from the most extruded part of the car).

Figure 5 When the object is within 3 feet and the car autobraked

When the car is getting closer than 3 inches to objects while going in reverse, the car will automatically brake. However, if the driver is still pressing the pedal in reverse(pressing s key), the driver input will override automatic braking. To see automatic braking working, stop pressing the pedal(stop pressing the s key) in reverse when it is expected to go close to the objects. You can see the car's speed is 0 in the Figure 5.

Figure 6 Crash detection

When the car causes crash, pressure sensor in the car detects the crash and automatically brakes itself. You can see the car's speed became 0 as soon as the car causes crash in Figure 6.