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Portable Driving Simulation Platform for Innovative Intersections

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16. Abstract

This report presents a portable driving simulation platform developed to improve public understanding and evaluation of innovative intersection designs. Built in Unity, the system integrates real-world roadway data with modular traffic and vehicle simulation to create realistic, interactive driving scenarios. Results show the platform effectively supports driver learning and stakeholder engagement, demonstrating its feasibility as a tool for education, safety analysis, and deployment support of innovative intersections.

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EXECUTIVE SUMMARY

Innovative intersection designs, such as the Displaced Left Turn (DLT) and Reduced Conflict Intersection (RCI), have been developed to enhance roadway safety and operational efficiency as traffic volumes increase. However, these unconventional layouts often prove difficult for the general public to understand during early deployment, leading to driver confusion, operational issues, and safety concerns. This lack of intuitive understanding frequently fuels public resistance to new infrastructure projects. Because traditional field pilots and visual materials offer limited opportunities for drivers to practice navigating these layouts, a portable driving simulation platform was developed using the Unity game engine to provide a controlled and repeatable educational environment.

The developed platform successfully integrates real-world roadway geometry with modular traffic and vehicle simulations. By utilizing official engineering documents from the Indiana Department of Transportation (INDOT) and aerial imagery, the simulator achieves a road model accuracy of approximately 3–6 ft. The system features a digital layer composed of modular C# components that manage realistic vehicle dynamics, radar-based collision avoidance, and traffic signal control modules. Four types of high-fidelity vehicle models—sedan, coupe, SUV, and pickup truck—were implemented with tuned physics to provide a realistic driving experience. Furthermore, the platform includes a scoring system that evaluates user performance based on path deviation, traffic light violations, and collisions, effectively supporting driver learning and stakeholder engagement.

For immediate implementation, the simulator is packaged as a portable kit inside 30-in. luggage cases, containing high-performance laptops, 22-in. monitors, and steering wheel/pedal sets for easy deployment at various locations. INDOT utilizes this platform as a critical public outreach tool during information meetings, allowing residents to experience proposed designs before construction begins to build community buy-in and reduce resistance. Future implementation strategies focus on deploying the system at Bureau of Motor Vehicles (BMV) branches to broaden public education. Proposed technical expansions include the integration of virtual reality (VR), the addition of diverse environmental conditions like snow or rain, and the inclusion of vulnerable road users such as pedestrians and cyclists to support more holistic safety evaluations.

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1. INTRODUCTION

Innovative intersection designs have been proposed to improve roadway safety and operational efficiency as traffic volumes continue to grow in many regions (Zlatkovic, 2019). Comparing to conventional intersections, designs such as the Reduced Conflict Intersection (RCI), the Displaced Left Turn (DLT), and the Roundabout Diamond Interchange reduce conflict points and reorganize traffic movements. Although these designs offer clear safety and operational benefits, the unfamiliar layouts often make them difficult for the general public to conceptualize prior to project construction. The resulting confusion can lead to operational issues and occasional safety concerns when drivers encounter these layouts for the first time (Hughes et al., 2006). Furthermore, this lack of intuitive understanding often fuels public resistance to new infrastructure projects, as skeptical residents may perceive unfamiliar designs as inherently unsafe or unnecessary.

Transportation agencies usually depend on field pilots or visual materials when introducing new designs, but these resources give drivers limited opportunities to practice navigating through unfamiliar configurations. Field deployment also requires high cost and coordination, and unexpected driver behavior may create safety concerns during early evaluation. Consequently, there is a critical need for controlled, repeatable simulation environments to safely examine innovative intersection concepts and driver responses before implementation (Philips & Morton, 2015; Roldan et al., 2019).

To address these needs, a driving simulation platform was developed with the Unity game engine, designed to educate people on how to navigate through innovative intersections. The platform represents each intersection through a detailed physical-world layer that includes road geometry, traffic control devices, and traffic flow information. It also contains a digital layer made of modular C# components that manage vehicle dynamics, traffic behaviors, sensor emulation, and user interaction. The platform allows users to drive a vehicle through keyboard or steering wheel input, and it provides customizable behavior for surrounding traffic, including waypoint following and collision avoidance. Moreover, to better guide users through innovative intersections, several scenarios and user interface guidance are designed for each map. Finally, to maximize accessibility, the system was configured into three independent, portable simulator kits (each containing a laptop and the required hardware packed in a luggage case). This allows the kits to be stored separately and shared across different Indiana Department of Transportation (INDOT) districts for easy deployment.

The remainder of this report is organized as follows. Chapter 2 explains the overall architecture of the simulator, including the selection of maps and vehicles. Chapter 3 explains the detailed workflow of each key component in the simulator. Chapter 4 explains the key features and functions of the final simulator. Chapter 5 concludes the report and discusses relevant future directions of the simulator. The Appendix contains a user manual and a packing guide to help relevant staff understand the best way to pack equipment together in the luggage case.

2. ARCHITECTURE AND DESIGN

2.1 Overall Architecture

This section introduces the architecture that links the real world to the simulation world for the study of innovative intersection designs, as shown in Figure 2.1. The architecture separates the representation of real roadway features from the logic that governs behavior in the simulation world. The real-world part contains roadway geometry, traffic control elements, and layout details taken from the locations used in this study. The simulation-world part manages vehicle motion, traffic flow, sensor functions, and driver interaction.

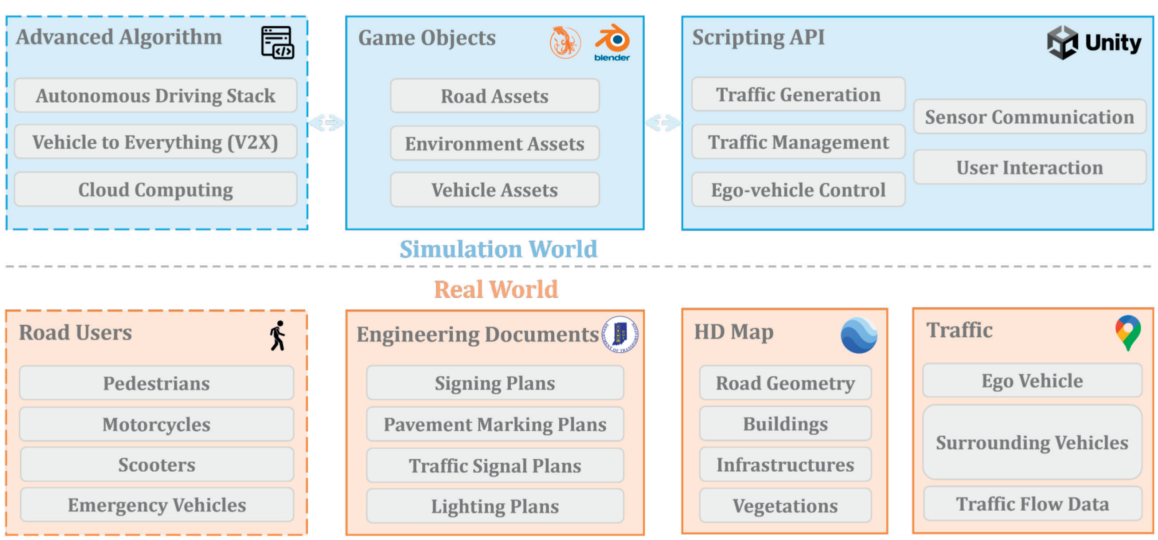


Figure 2.1 Overall Architecture of the Simulator.

2.1.1 Real World Layer

The real-world layer captures the physical components that characterize an innovative intersection. While additional road users, such as pedestrians or motorcycles, appear for contextual completeness (not in scope of this study), this project centers on the roadway geometry and lane configurations from engineering documents, control devices, and spatial layout from Google Earth and Google Maps that govern vehicular movement at the actual site.

High-Definition (HD) Maps are extracted from Google Earth to construct the road geometry and environmental objects such as buildings, infrastructure, and vegetation for better realism. Moreover, based on the engineering documents provided by INDOT, which include details of pavement markings, traffic signs, and signal positions, each intersection is constructed with attention to lane offsets, turn paths, curvature, and grade, ensuring the simulation-world geometry matches the real location. Additionally, road signs, pavement markings, traffic signals, and streetlights are also placed according to the engineering plans. These features establish a structured base that reflects how the intersection is organized and how vehicles are expected to move through each segment.

Traffic demand and movement patterns are derived from real-world observations, supplemented by Google Maps data. Turning counts, approach volumes (reduced for easier driving), and signal timing plans are used to define the flow of vehicles at each entry point. These inputs ensure the simulation world receives traffic conditions representing the real environment. The real-world layer provides the foundation on which the rest of the architecture depends to generate an accurate simulation environment.

2.1.2 Simulation World Layer

The simulation world integrates numerous components that translate real-world inputs into dynamic runtime behavior. Prior work has predominantly focused on advanced algorithms, such as autonomous-driving stacks. In contrast, this study examines the system-level architecture that provides a robust platform for these algorithms. As shown in Figure 2.1, this study focuses on two foundational aspects of the simulator: the Unity game objects composing the virtual environment and the scripts governing their behavior.

Unity game objects provide the environment's physical and visual elements. They include roadway and environmental assets derived from real-world intersection data, along with vehicle assets for the ego vehicle and surrounding traffic. These objects define the geometry, collision structure, and appearance of the simulation world.

The scripts define how the simulation world evolves and how the game objects respond to events. The scripts include modules for generating traffic, managing intersection movements, updating the ego vehicle's state, facilitating communication with sensors, and handling user interaction. Each module focuses on one part of the simulation logic, and all modules run together within the Unity Scripting API (Application Programming Interface). The scripts, therefore, connect the real-world inputs to the visual environment and maintain consistent behavior throughout the simulation. They also support the transition from real-world layout to simulation-world dynamics, laying the foundation for the detailed workflow presented in the next section.

2.2 Intersection and Vehicle Selections

2.2.1 Intersection Selections

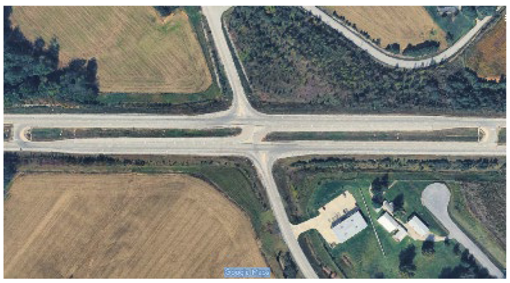
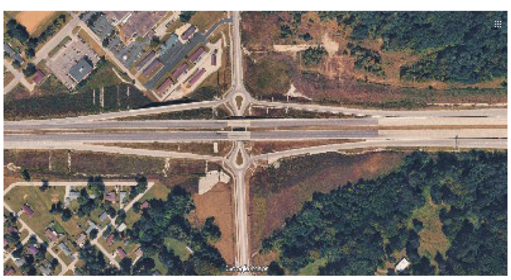
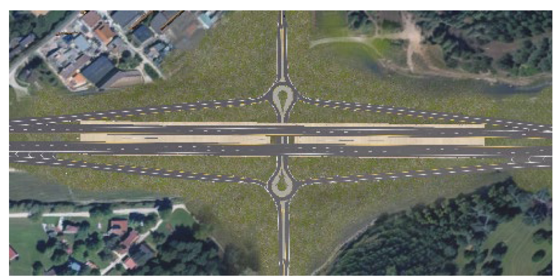
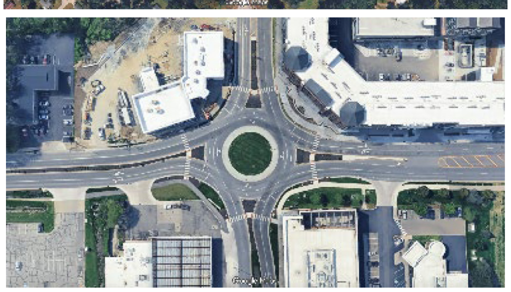
Considering the resources available and advice from INDOT, the following intersections in the real world are chosen as target intersections and references for the simulation world:

- Displaced Left Turn: State Road (SR) 66 at Burkhart Rd., Evansville, Indiana
- Reduced Conflict Intersection: U.S. Route (US) 231 at SR 70, Chrisney, Indiana
- Diverged Diamond Interchange: Interstate 65 (I-65) at US 52, Lebanon, Indiana
- Roundabout Diamond Interchange: SR 252 at I-69, Martinsville, Indiana
- Two-lane Roundabout: 116th St. at Westfield Blvd., Carmel, Indiana

The details and reasons for choosing each intersection are shown below:

- A DLT intersection guides left-turning vehicles to the opposite side of the road prior to the main intersection, allowing them to proceed simultaneously with through traffic. It can be initially confusing to the public because drivers feel unnatural navigating into a lane on the side of the opposing traffic and must drive through an extra set of traffic signals before the primary crossing.
- A RCI prohibits drivers on minor cross streets from proceeding straight or turning left directly across a divided main highway. Instead, it forces them to make a right turn followed by a U-turn, which is inconvenient for the drivers to reach their intended destination at first time.
- A Diverging Diamond Interchange (DDI) shifts nonfreeway traffic to the left side of the road across a freeway overpass or underpass, eliminating the need for left-turning vehicles to cross in front of oncoming traffic to enter the on-ramps. While this design significantly improves safety and throughput, its unconventional layout may catch some drivers off-guard and lead to concern from prospective motorists.
- A Roundabout Diamond Interchange replaces traditional traffic signals at highway ramp terminals with circular, yield-controlled roundabouts. The primary challenge for many motorists is a lack of familiarity with roundabout navigation, which is compounded by the need to quickly process yielding rules and lane assignments immediately after exiting a high-speed freeway environment.
- A Two-Lane Roundabout (RAB) is a circular intersection that handles higher traffic volumes by utilizing two concentric lanes that flow continuously around a central island. Some drivers find them confusing because they require choosing the correct lane before even entering the roundabout, and they demand high situational awareness to avoid collisions when drivers make improper movements.

TABLE 2.1
Satellite Image and Simulator Screenshots of Intersections.

Name	Satellite Photo	Simulator Photo
DLT		
RCI		
DDI		
Roundabout Diamond Interchange		
RAB		

The satellite images and simulator screenshots of each intersection are shown in Table 2.1, for reference. Note that the exact imagery are not used in this study, since some intersections are still in the planning stage.

2.2.2 *Vehicle Model Selections in the Simulator*

To cover the majority of vehicle types used by the public, four types of vehicles are implemented in the simulator, including

TABLE 2.2
Images of Vehicles in Real World and Simulator.

Type	Real Photo	Simulator Photo
Sedan		
Coupe		
SUV		
Pickup Truck		

sedan, coupe, SUV, and pickup truck (Table 2.2). Based on the accessibility of high-fidelity models online, the following models are chosen:

- Sedan: Toyota Camry
- Coupe: Lexus RC
- SUV: Honda CR-V
- Pickup Truck: RAM 1500

3. IMPLEMENTATION WORKFLOW

This section explains the workflow for building each scenario from real intersection layouts to functional components in the simulation world. As shown in Figure 3.1, the workflow includes three parts:

1. The first part generates the map and roadway geometry from real drawings and aerial imagery;

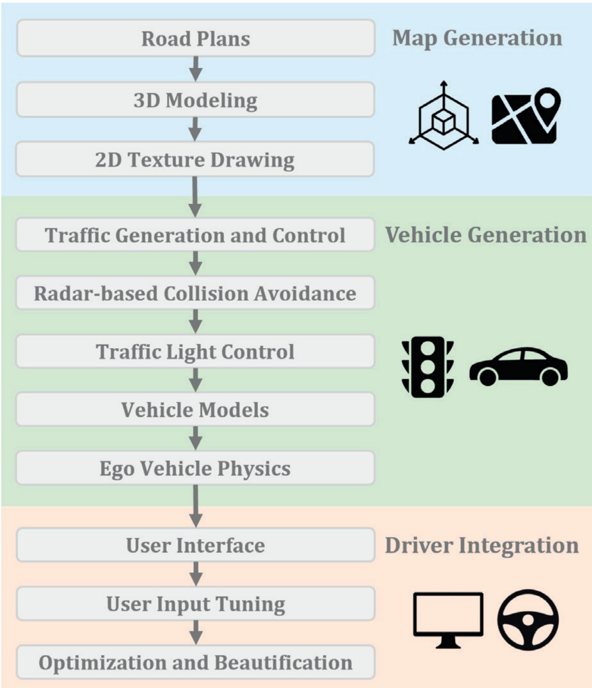


Figure 3.1 Overall Workflow of the Simulator.

2. The second part generate vehicle traffic through waypoint paths, traffic logic, and motion settings; and
3. The third part configures driver interaction for the ego vehicle through keyboard, or steering-wheel input.

3.1 Map Generation

Each scenario begins with the construction of the map that reflects the geometry of the real intersection. Engineering road-plan documents are acquired from INDOT and are used as the basis for reproducing the roadway layout and relevant structures (Figure 3.2). These plans are used to guide the creation of 3D models in Blender, a modeling software commonly used for geometric reconstruction and scene development. In Blender, the roads and related structures are modeled according to the measurements in the documents, preserving the scale and alignment of the real site. Then, two-dimensional (2D) textures are created in Photoshop and applied to the models. After preparing these assets, all assets are imported into Unity and assembled into a complete simulation map. The final absolute accuracy of the road models would be around 3–6 ft. This workflow establishes a direct transition from the real-world layout to the simulation environment.

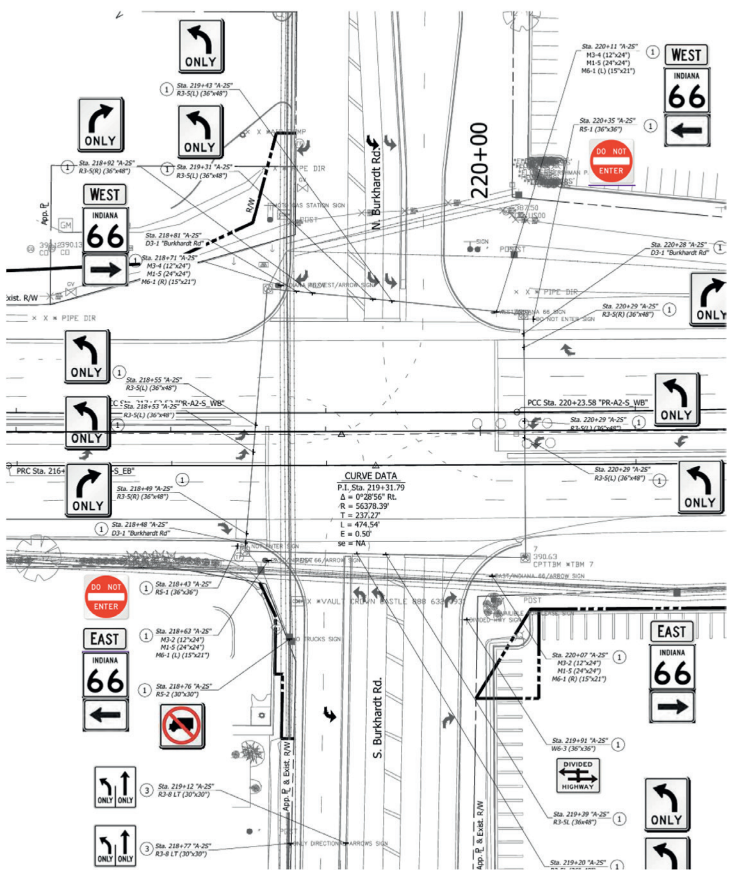


Figure 3.2 Example Road Plan Document From INDOT for Traffic Sign Placements.

3.2 Vehicle Generation

3.2.1 Traffic Generation and Control

Vehicle generation covers the creation of surrounding traffic, the behavior of those vehicles, the logic for signalized movements, and the configuration of the ego vehicle used by the driver. The process begins with the creation of traffic flow, which generates vehicles evenly on major lanes in each direction. Vehicles are spawned with different speeds and vehicle models to simulate a natural traffic flow as in real life. Though real world traffic volumes were initially entered in the models, these volumes were reduced to lessen the pressure on users from the surrounding traffic. After entering the network at predefined spawn points on each lane, the vehicles will start moving at the target speed on the predefined paths. Each path is made of several waypoints connected with Bezier curves, which form smooth transitions (Figure 3.3). After finishing the path, the vehicle will restart the same path at the beginning, forming a continuous traffic flow over time.

3.2.2 Radar-Based Collision Avoidance

Traffic vehicle behavior is governed by a set of scripts that handle collision avoidance and responses to traffic signals. Ray casting are developed for collision detection, enabling each vehicle to detect obstacles via virtual radar beams. Long- and short-range beams at the front of the vehicle support car-following and stopping behavior, and two beams at the rear corners cover blind-spot areas (Figure 3.4). The sensor manager collects readings from these beams and passes them to the vehicle manager, which updates the acceleration and deceleration commands. In areas with complex maneuvers, such as lane changes or circular movements, the short-range beam can rotate to widen the view angle while keeping the computing

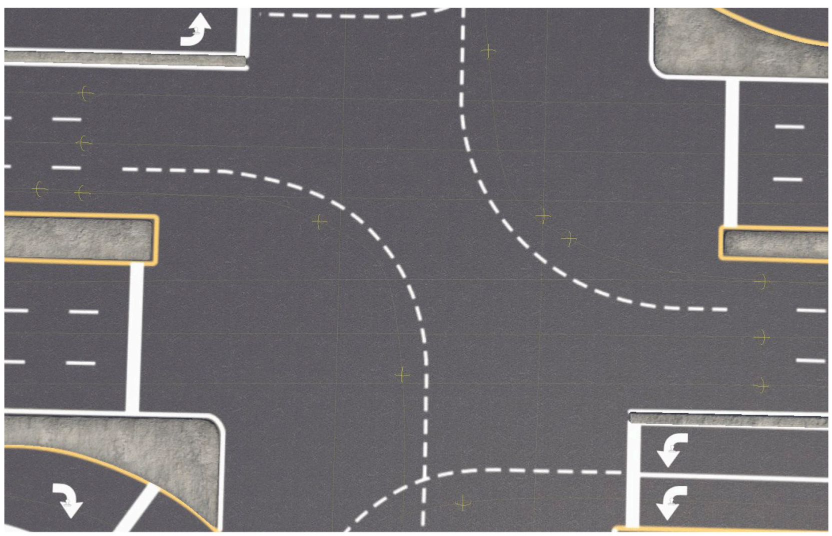


Figure 3.3 Predefined Paths and Waypoints at DLT (in Yellow).

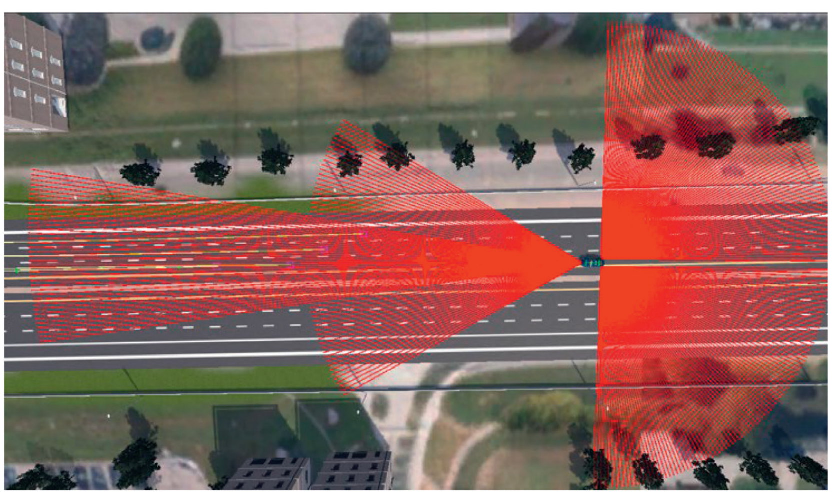


Figure 3.4 Radar Sensors on a Vehicle.

```
Algorithm 1 Obstacle Detection Speed Control
procedure HandleObstacleDetection
    if radar is missing or movement controller is missing then
        return
    end if
    detectedObjects ← merge(long-range radar, short-range radar)
    if detectedObjects is empty then
        obstacleDetected ← false
        gradually return speed to originalSpeed
        return
    end if
    closestDistance ← nearest detected object
    obstacleDetected ← (closestDistance < radarSlowDownRange)
    if at stop sign then
        if obstacle is very close then
            set speed ← 0
        end if
        return
    end if
    if not paused then
        if closestDistance is within stop threshold then
            set speed ← 0
        else
            targetSpeed ← smooth scale from 0 to originalSpeed based on distance
            smoothly adjust current speed toward targetSpeed
        end if
    end if
end procedure
```

Figure 3.5 Pseudocode for Obstacle Detection and Speed Change.

cost low. A piece of pseudocode for handling obstacle detection and speed control is shown in Figure 3.5.

3.2.3 Traffic Signal Control

In the simulation, a traffic light control module is developed to cycle through phases and manage the on–off states of each signal head, especially for the DLT and DDI. The three-dimensional (3D) model and art assets of traffic lights are created in Blender and Photoshop, then multiple traffic light heads are bounded together for the same phase to ensure transitions (Figure 3.6). The length of each phase is designed based on real traffic behavior and advice from INDOT. An all-red phase is added between each phase transition for different directions of traffic to simulate a realistic traffic light behavior. In addition, the traffic will react based on the traffic light phases,

Figure 3.6 Traffic Lights in DLT at Different Phases.

```
Algorithm 2 Traffic Light Pause and Resume Control
procedure PAUSECAR(target)
    if target is null or target is not a GameObject then
        return
    end if
    lightRenderer ← Renderer from target
    if lightRenderer is missing then
        return
    end if
    if tween is active and light is OFF and not pausedForTrafficLight and not obstacleDetected then
        stop speed-change/resume coroutines
        pausedForTrafficLight ← true
        duration ← 2 · stopDistanceOriginalcurrentSpeed
        smoothly reduce speed to 0, then pause movement
        start waiting coroutine for light to turn ON
    end if
end procedure
procedure WAITFORLIGHTTOTURNON(lightRenderer, moveRef)
    while light is OFF do
        wait 0.5 seconds
    end while
    pausedForTrafficLight ← false
    if not pausedForCollision then
        wait randomDelay
        resume movement
        smoothly accelerate from 0 to originalSpeed
    end if
end procedure
```

Figure 3.7 Pseudocode for Traffic Control at Traffic Lights.

as shown in the pseudocode in Figure 3.7. This module allows the scenario to reproduce movements at intersections that contain one or more signalized approaches.

3.2.4 Vehicles

The ego vehicle is configured separately and follows a physics model controlled by the user. The model was developed based on a vehicle-physics framework in Unity that exposes parameters such as engine characteristics, gear ratios, suspension settings, and tire friction. These parameters are tuned to match real vehicles, ensuring the driver experiences realistic motion when interacting with the scenario (Figure 3.8). The acceleration and top speed of the vehicles are reduced, helping drivers to navigate the unfamiliar simulator. Vehicle models are imported from external sources and adjusted in Blender and Unity to ensure proper alignment and appearance in the simulation.

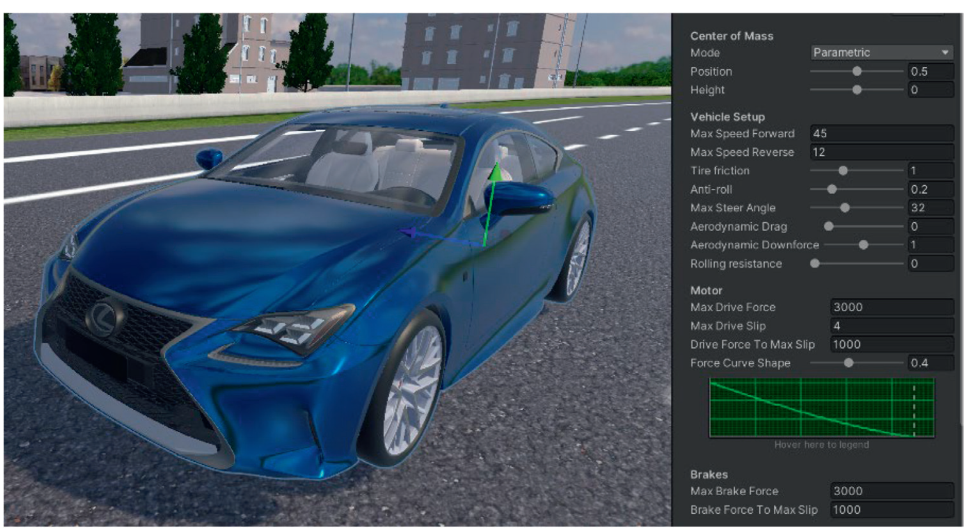


Figure 3.8 Tuning Page for the Vehicle Physics of the Lexus RC.

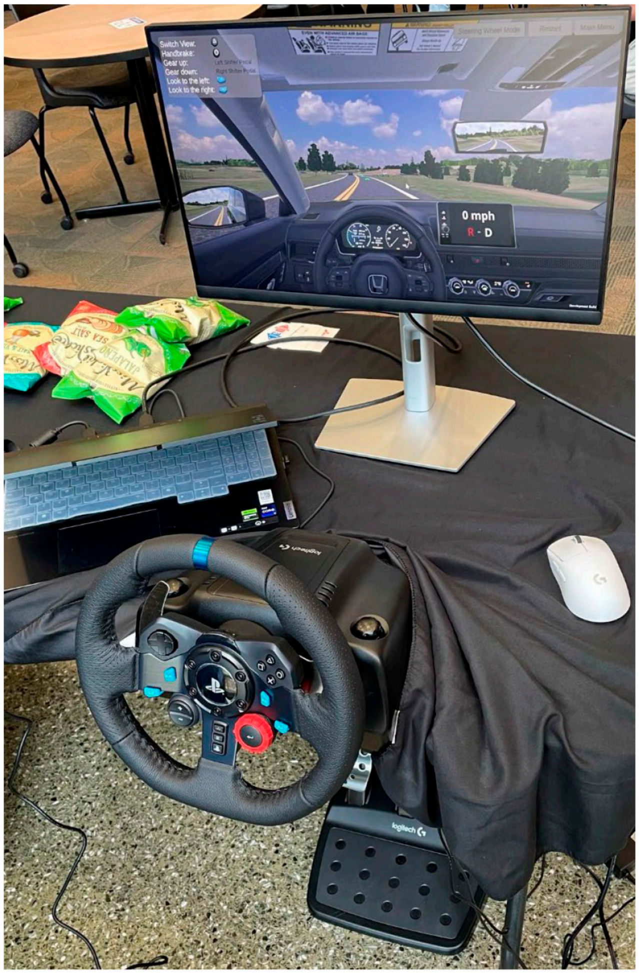


Figure 3.9 Example Setup of the Whole Driving Kit.

3.3 Driver Integration

A driver integration module is used to connect the user with the simulation world and support experiments that require direct control of the ego vehicle. The first step is the user interface, which was designed to allow selection of maps, vehicles, and scenario presets. Scenarios with guidance were created to help users navigate innovative intersections by showing visual cues such as arrows or short text prompts. To control the ego vehicle, a steering wheel and pedal set (Logitech G29) was set up with our system. The steering input is synchronized with the virtual steering wheel, so the driver receives a natural response when turning. For testing situations where a physical wheel is not practical, keyboard and controller input are also supported. An example setup is shown in Figure 3.9. A user guide for how to set up the driving kit is shown in Appendix A.

4. SIMULATOR FEATURES

In this section, all key features of the simulator are explained in detail to illustrate how users can use the simulator, including the hardware in the final project deliverables.

4.1 Environment Selection

For any driving scenario, the user will have to select an intersection (Figure 4.1), a specific scenario (Figure 4.2), and a vehicle model (Figure 4.2) first. When the user is choosing the intersection, he/she would also be able to try a small tutorial map, as shown in Figure 4.3. The tutorial map will guide the user through a simple four-way intersection through

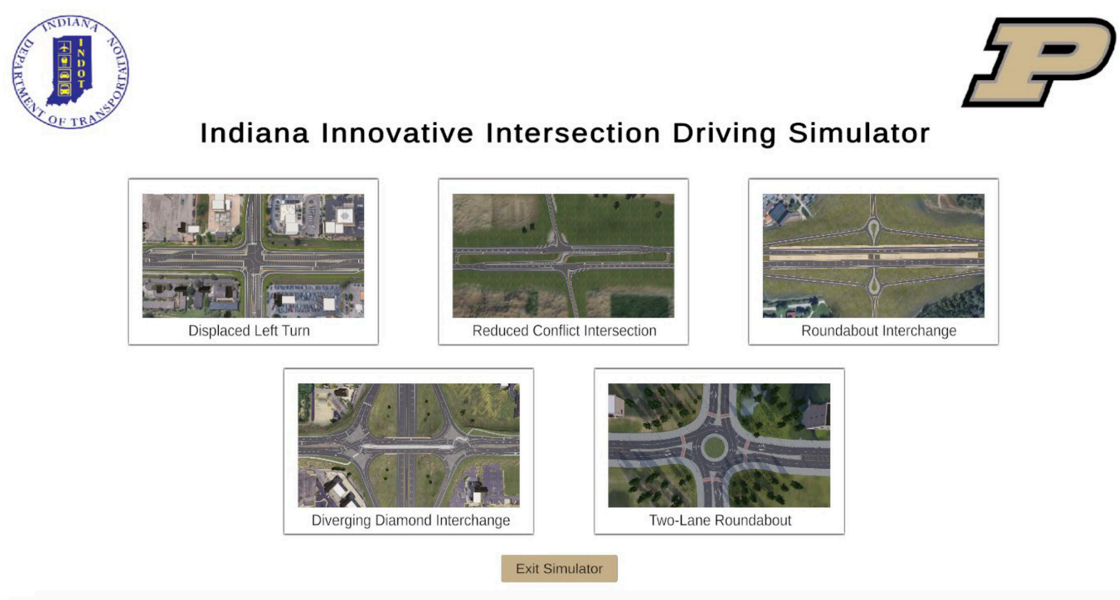


Figure 4.1 Intersection Selection Page.

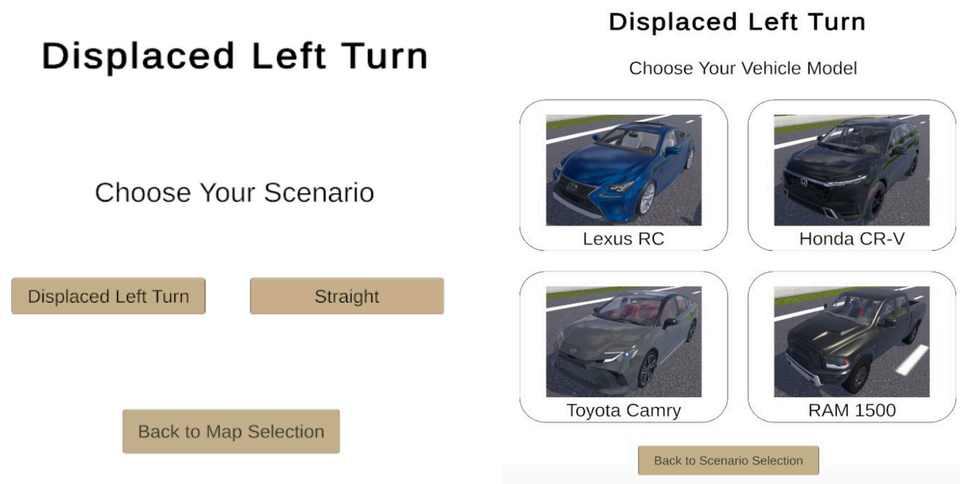


Figure 4.2 Scenario Selection (Left) and Vehicle Selection (Right).

Figure 4.3 Tutorial Map With a Simple Right Turn.

Figure 4.4 Example Overlay During Any Driving Scenarios.

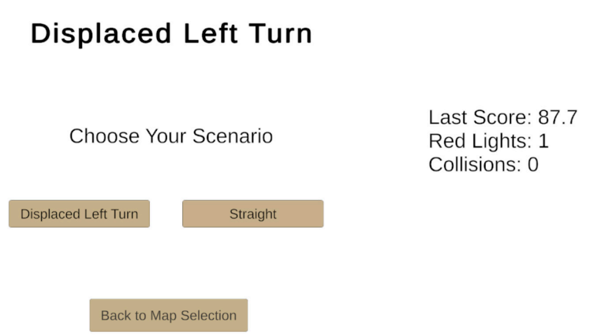


Figure 4.5 Driving Score Display.

a right turn to get familiar with the vehicle control. After selecting the intersection, each scenario follows a different path through it, aimed at highlighting the key differences between these innovative intersections and traditional ones. For example, one can choose to take a left turn at the DLT or go straight through the DLT. They will start and end at different places based on the scenarios chosen.

4.2 Vehicle Control

During the driving process in any scenario, the user is able to see a user-interface overlay on the screen (Figure 4.4). The user would be able to see all the key bindings in the top left corner for all possible interactions with the simulator. Other than basic driving control (throttle, brake, handbrake, steer, gear change), one would also be able to change the camera view from a bird's-eye view to an in-cabin view, as well as rotate the camera to the left and right to see incoming traffic and mirrors. The user can also switch the input mode between keyboard and steering wheel by clicking the button on the top right. Finally, the user is also able to see the current speed of the vehicle at the bottom right corner for better control.

4.3 Guidance and Scores

In each driving scenario, there will be arrows floating on the road guiding the user to navigate through the intersections, not only showing the correct directions along the path, but also reminding the driver when he/she should slow down, as shown in Figure 4.4. In addition, after each scenario completion, the user would be able to see a score representing how well he/she drove for that trip. The score is calculated based on how much the path deviates from the arrows, how many red lights the user violated, and how many collisions occurred (Figure 4.5). The path used as reference (meaning no score deduction if you follow it) is the path where the arrows are, and the average perpendicular distance to the path is calculated throughout the whole path. Based on the distance, a linear reduction of score from 0 to 20 would be applied to the final score. For each running red light and collision, 5 score would be deducted as well. Overall, a minimum score of 80 is set to maintain the confidence of the driver on their driving performance.

Beyond driver education, INDOT utilizes this simulator as a critical component of public outreach. During public information meetings for proposed improvements, the simulator allows community members to drive through the new design before construction begins. Because the public is often apprehensive of unfamiliar layouts, providing a hands-on experience helps demystify the movements and demonstrates the safety benefits in a tangible way. By replacing uncertainty with familiarity, the simulator effectively reduces public resistance and builds community buy-in for these innovative infrastructure projects.

4.4 Final Package

In the final deliverable of this project, there are several other hardware components packed together with the laptop. The simulation is installed on each laptop, and inside each 30-in. luggage case, the following items are also included: 22-in. Dell monitor; Logitech G29 steering wheel and pedal; and all cables, foam, and bubble sheets for protection. To see how to pack everything in order, check Appendix B for more details.

5. CONCLUSION AND FUTURE WORK

The portable driving simulation platform developed in this study demonstrates a practical and scalable approach to addressing the challenges associated with public understanding and evaluation of innovative intersection designs. By integrating real-world roadway data with a modular simulation architecture, the system successfully recreates complex traffic environments while maintaining flexibility for different scenarios and user interactions. The combination of realistic vehicle dynamics, configurable traffic behavior, and intuitive guidance mechanisms enables users to safely experience unfamiliar intersection layouts in a controlled setting. Furthermore, the portability of the hardware package allows the simulator to be easily deployed in various locations, enhancing its value as both an educational and research tool. Overall, the project validates the feasibility of using a portable, high-fidelity simulation platform to improve driver comprehension and contribute to safer adoption of innovative intersection designs.

Future work will focus on expanding both the functionality and impact of the simulator. One important direction is deploying the system at Bureau of Motor Vehicles (BMV) branches to support public education and outreach, allowing a broader audience to gain hands-on experience with innovative intersections. The integration of virtual reality and augmented reality technologies can further enhance immersion and realism, improving user engagement and learning outcomes. Additionally, incorporating diverse environmental conditions such as rain, snow, and low-visibility scenarios will enable more comprehensive safety analysis under varying driving conditions. Expanding the simulation to include other vulnerable road users, such as pedestrians, cyclists, and motorcyclists, will also provide a more complete representation of real-world traffic interactions and support more holistic safety evaluations.

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APPENDICES

Appendix A. User Guide

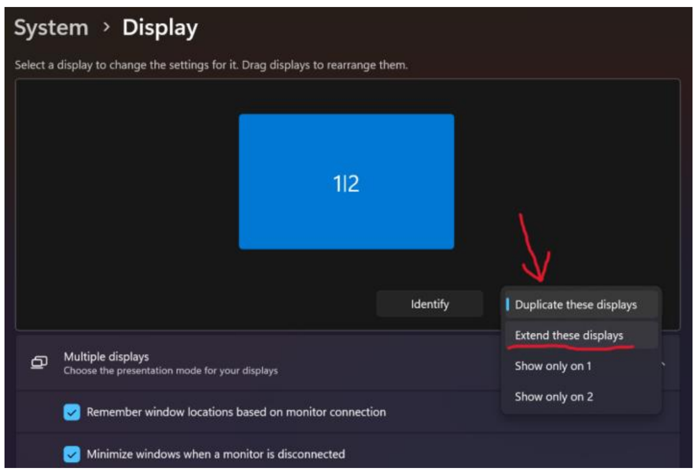
Appendix B. Packing Guide

Appendix A. User Guide

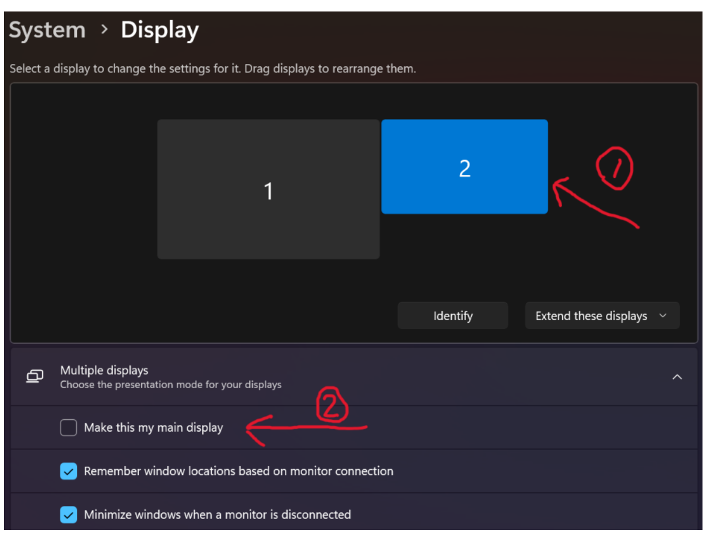
Before using the simulator, the user needs to connect the hardware altogether based on the following steps:

Step 1: Connect monitor or TV:

- Connect the laptop to the monitor using the HDMI cable
- If you have done step 1 with the same monitor before, skip to step 2
- Open Windows Settings (Win + I)
- Go to System > Display
- Click on the bottom right drop-down button and select "Extend these displays"



- Select the second monitor with "2", and check the box below with "Make this my main display"



- Your cursor will be moved to the monitor, but you can move it back anytime

Step 2: Connect steering wheel and pedal

- Connect power of the steering wheel
- Make sure the pedal is connected to the steering wheel
- Mount the steering wheel on the table
- Connect steering wheel USB cable to the laptop (WARNING: Do not touch the steering wheel since it will rotate to calibrate itself)

Step 3: Open the simulator

- Double click on either “Simulator.exe” or “Simulator_Lite.exe” in the folder.
- If the simulator is opened on the laptop screen, make sure you follow the instructions above for setting up the monitor connection.

Appendix B. Packing Guide

As the space in the luggage is very limited with everything packed, guidance on how to pack each item inside the luggage is shown below in Table B.1.

Table B.1
Packing Steps With Photo Guidance.

Steps	Photo
Lay the empty luggage on the ground, place the monitor in one half without the zip, facing upward, together with foam at bottom, protection sheet on the screen	
Put one sheet of bubble sheet on top of the monitor, and laptop on top of that. Wrap the pedal with another long bubble sheet, and place it on top of the laptop.	 
Lay one bubble sheet on the ground, and put the steering wheel on top of it, with the wheel facing down. You do not have to disconnect the pedal with the steering wheel. Wrap the steering wheel around, and put it next to the stack of items as shown. Make sure you have the motor behind the wheel horizontal.	 
Lay the last bubble sheet on the ground, and wrap around all the cables left with the base of the monitor. Put them in the gap next to the steering wheel.	 

About the Joint Transportation Research Program (JTRP)

On March 11, 1937, the Indiana Legislature passed an act which authorized the Indiana State Highway Commission to cooperate with and assist Purdue University in developing the best methods of improving and maintaining the highways of the state and the respective counties thereof. That collaborative effort was called the Joint Highway Research Project (JHRP). In 1997 the collaborative venture was renamed as the Joint Transportation Research Program (JTRP) to reflect the state and national efforts to integrate the management and operation of various transportation modes.

The first studies of JHRP were concerned with Test Road No. 1—evaluation of the weathering characteristics of stabilized materials. After World War II, the JHRP program grew substantially and was regularly producing technical reports. Over 1,600 technical reports are now available, published as part of the JHRP and subsequently JTRP collaborative venture between Purdue University and what is now the Indiana Department of Transportation.

Free online access to all reports is provided through a unique collaboration between JTRP and Purdue Libraries. These are available at docs.lib.purdue.edu/jtrp/.

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