UBC Cognitive Systems Program / UBC Emerging Media Lab

COGS 300

Márton Sóskuthy, Rebecca Jourard, Reva Nambiar, Tania Khan, Elaine Shi, Reid Patterson, Elizabeth Earle, Kyle Van Winkoop, Kyle Brent

THE BACKGROUND

COGS 300: Understanding and Designing Cognitive Systems, a core course of the Cognitive Systems program, centers around the "theory and methods for integrating diverse disciplinary content in cognitive systems"[1].

The course is twofold: **Lectures** that touch on *theories* from Physical Symbol Systems (PSS) to Connectionism to Embodied Cognition; and hands-on **Labs (0-9)** where students use Unity and C# to *explore* these concepts from an intro to Unity to designing a Robot using Machine Learning for a tournament.

COGS combines Philosophy, Linguistics, Psychology, and Computer Science to explore cognitive agents and their environments, both artificial and natural[2].

THE PURPOSE

The **goal** of this project is to firstly *identify* areas of potential improvement within the Labs component of the course, secondly *explore and experiment* with these improvements, and thirdly *implement* them.

We have identified the following branches of the project for improvement:
- **User Research & User Experience**
- **Lab Functionality**
- **Lab Visuals & Story**
- **Instructions**
- **Code Supports**
- **Pedagogy & Structure**
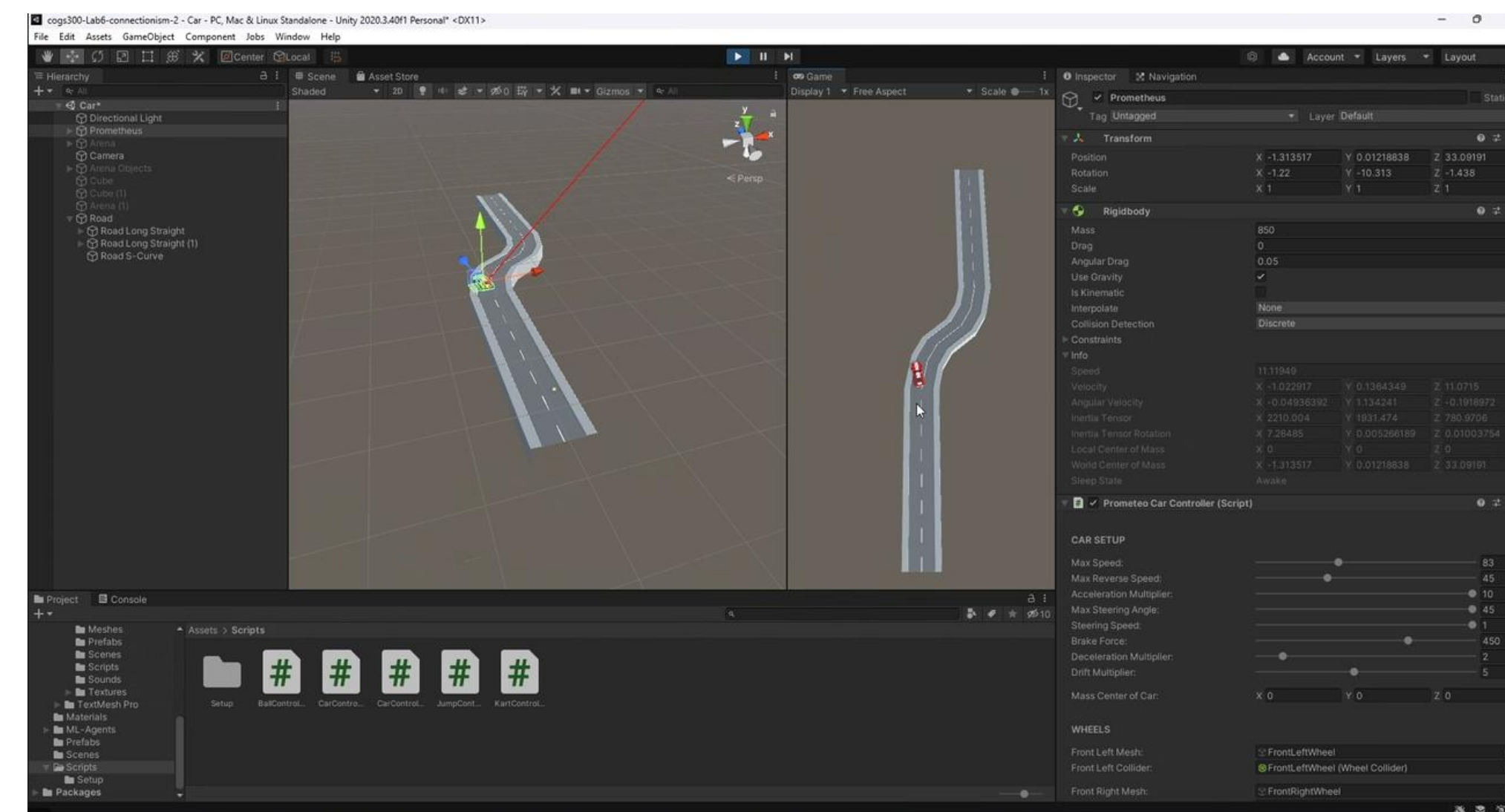
Lab 2 Tinkering   Photo credit: Reid Patterson

THE PROCESS

We identified the following main problems, ideating the following potential solutions listed after the arrow:

- Closing the "non-CS gap" and *engaging* students with less programming experience → provide code supports, create an engaging story, propose grading shift from technical to exploratory.

- *Connection* between lectures and labs → redesign some of the weaker labs, integrate story into labs and instructions.

- Lack of *clarity* in the instructions → go through labs, identify potential edits, rewrite for clarity, add in visual aids.

- *Technical difficulties* with certain hardware and software → debug lab functionality, look into access to hardware for the COGS Lab.

THE PLATFORMS

Lab content is created in Unity 2020.3.40f1 and version controlled through GitHub. Lab instructions are currently hosted on UBC Blogs at https://blogs.ubc.ca/cogs300/. Ideation and design is on Miro.

THE FEATURES

The current developments of the project branches are as follows:

- **User Research & User Experience:** report including data and suggestions compiled from interviews, surveys, and lab visits.
- **Lab Functionality:** exploratory initial development of Labs 2 & 6 changes.
- **Lab Visuals & Story:** development of storyline: "single soul in different robot bodies, learns about their place in the overarching history of artificial intelligence". Development of moodboard and initial exploration of character and environment models.
- **Instructions:** proposal of suggested edits and visual changes.
- **Code Supports:** ideas for the Unity & C# reference sheet.
- **Pedagogy & Structure:** proposal for grading changes.
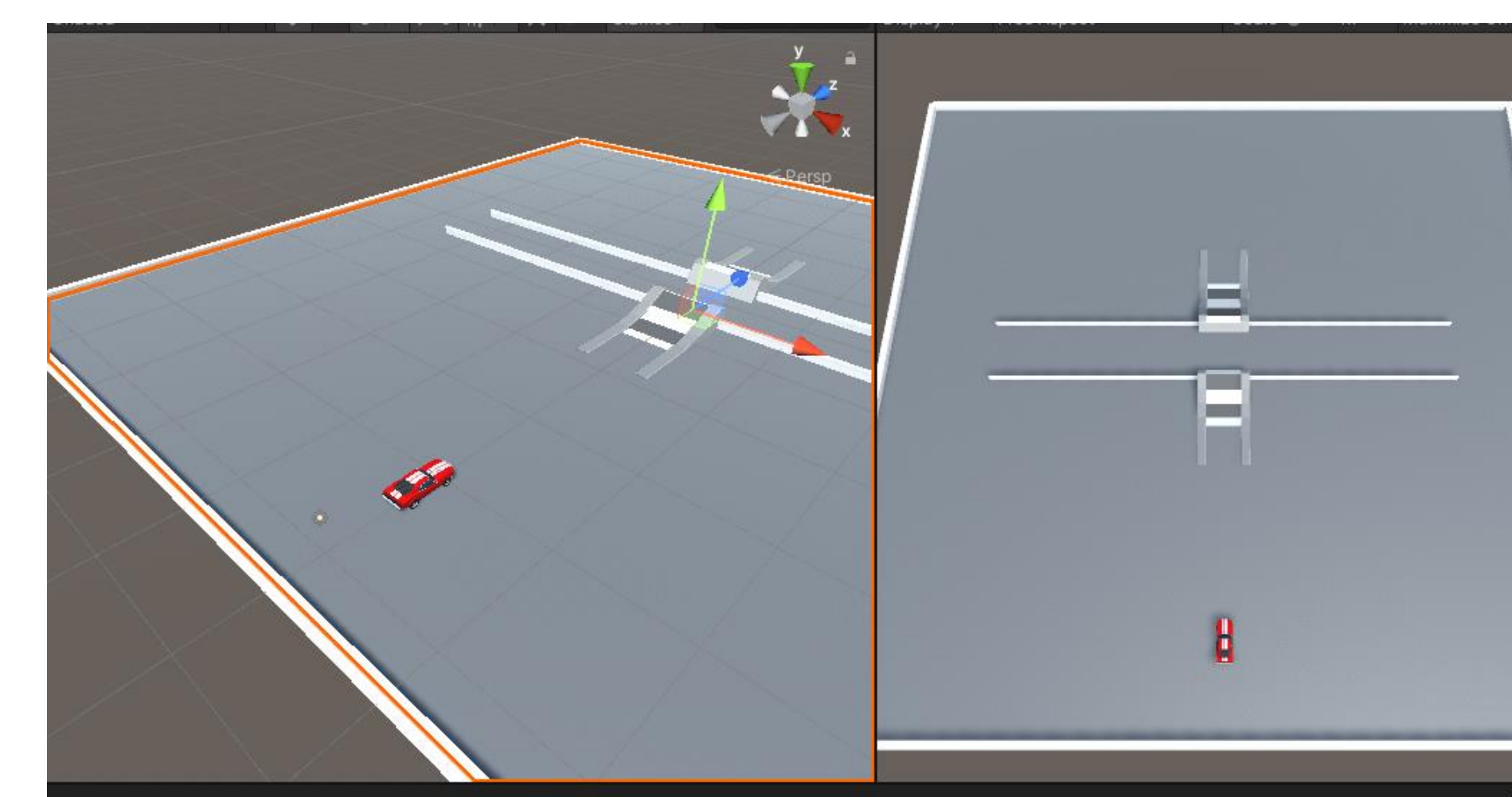
Lab 6 Tinkering   Photo credit: Reid Patterson

THE NEXT STEPS

The next steps for COGS 300 includes but is not limited to:

- **Lab Functionality:** complete implementation of Lab 2, 4, 6 redesigns.
- **Lab Visuals & Story:** implement new models in all labs with lighting, textures, and animations. Add story to the instructions.
- **Instructions:** assess platforms. Implement visuals.
- **Code Supports:** complete the Unity & C# reference sheet and create an additional optional tutorial for students to access.
- **Pedagogy & Structure:** implement a redesign of the grading of labs from technical to exploratory.

The COGS 300 Labs continue to inspire and empower a generation of COGS students in their journeys towards designing and understanding cognitive systems.

Reference / Bibliography

1. https://courses.students.ubc.ca/cs/courseschedule?pname=subjarea&tname=subj-course&dept=COGS&course=300
2. https://cogsys.ubc.ca/

Acknowledgement