

# Collaborative Control of Autonomous Cars

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## Motivation

Research how autonomous cars affect drivers.

### CARLA 0.9.13 Overview

CARLA version 0.9.13 was used for testing throughout the project. It is an open source car driving simulator.

It allows for the team to edit and expand upon the already created python programs embedded to suit their needs.

The team also wanted the simulator to be as realistic as possible. CARLA has multiple different vehicles and viewpoints to choose from, but the team had to create a dashboard view in order to make it the most realistic.



<https://carla.org/2021/11/16/release-0.9.13/>

## Goals

The goal of this project is to determine if drivers become too reliant on the autonomous driving technology. More times than not, when an autonomous vehicle is driving, the driver will become more relaxed at the wheel. However, what happens if the driver is put into scenarios where they *must* intervene? What will happen? This project aims to find out.



## How is it Done?

The team was able to utilize RoadRunner and ScenarioRunner in order to create custom maps and scenarios in order to test the driver. RoadRunner is an engine that allows a user to create their own custom map compatible with CARLA, so the team created a four lane highway. Then, ScenarioRunner was used to create different scenarios in which the driver must take over to prevent a collision with another vehicle.

## Roadblocks

The team did encounter some roadblocks along the way. The first was the autopilot agent. The agent would have a set destination in mind and if the driver changed course, it would begin to automatically correct itself to remain on the predetermined course. This was fixed by changing from the global autopilot agent to the local autopilot agent.

Secondly, exporting maps from RoadRunner and ScenarioRunner did not come without their faults. Some assets would import incorrectly. When that happened, the fix would have to be made, and the entire map would need to be exported again. This was time consuming.



The RoadRunner map view



The exported map view