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Collaborative Control
Of Autonomous Cars

Milestone 2 Report

Overall Progress
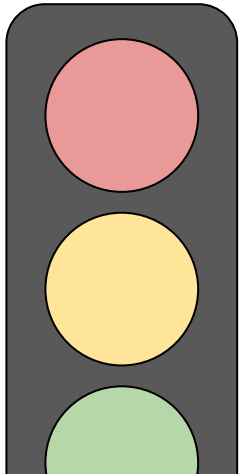
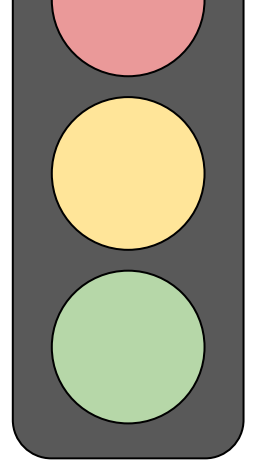Collaborative Control Python File - 90% Complete

Implement Reactive Dashboard - 90% Complete

Analyze "ScenarioRunner" - 85% complete

Implement Overtaking Scenarios - 30% complete

Analyze Autopilot Agents - 50% complete

Create New Viewpoint of Driver's Seat - 100% complete

Collaborative Control Python File

- Collaborative control takes input from both user and autonomous agent
- Current action is to evenly split input from both users
- Has many annoying side effects
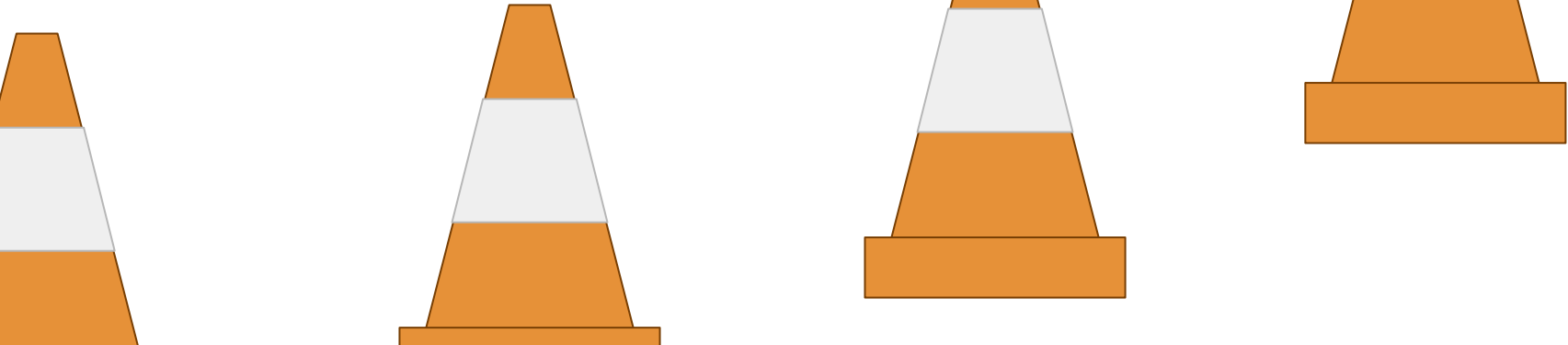- Easy to modify how program handles input combination
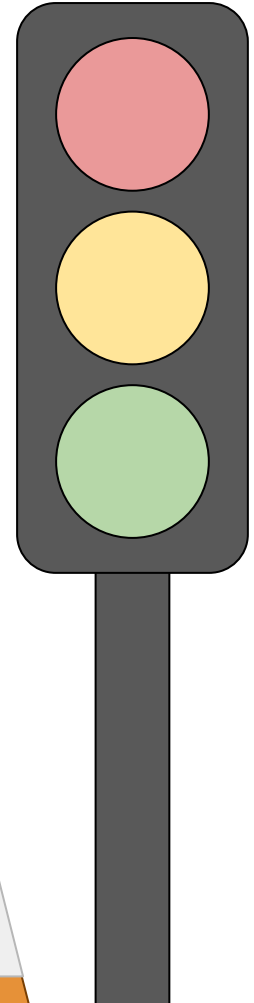
Demo

Implement Reactive Dashboard

- Original plan was to just overlay an image to "act" as a dashboard
- As time went on, the dashboard became more intricate
  - Reactive Steering Wheel
  - Speed Display
- Implementing it into the "main" game loop has proven more difficult than originally thought

Analyze Scenario Runner

- A tool designed for testing autonomous agents within the CARLA simulator environment.
- Main goal was to help us implement and test overtaking capabilities of autonomous agents.
- Latest Scenario Runner version has some compatibility issues with the CARLA simulator version being used.
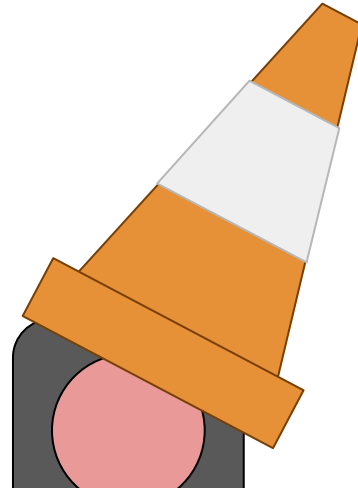
Implement Overtaking Scenarios

- Get waypoints based on agents current location
  - world.get_map().get_waypoint(vehicle.get_location(), lane_type=(carla.LaneType.Driving))
- Check if lane change based on the current waypoint is allowed
- Check for obstacles on left lane
- Perform overtaking maneuver
- Delay in implementation due to encountered ScenarioRunner compatibility issues

GO

Analyze Autopilot Agents

- Two types of agent
- Type one: Dynamic, useful, unreachable
- Type two: Reachable, requires changes
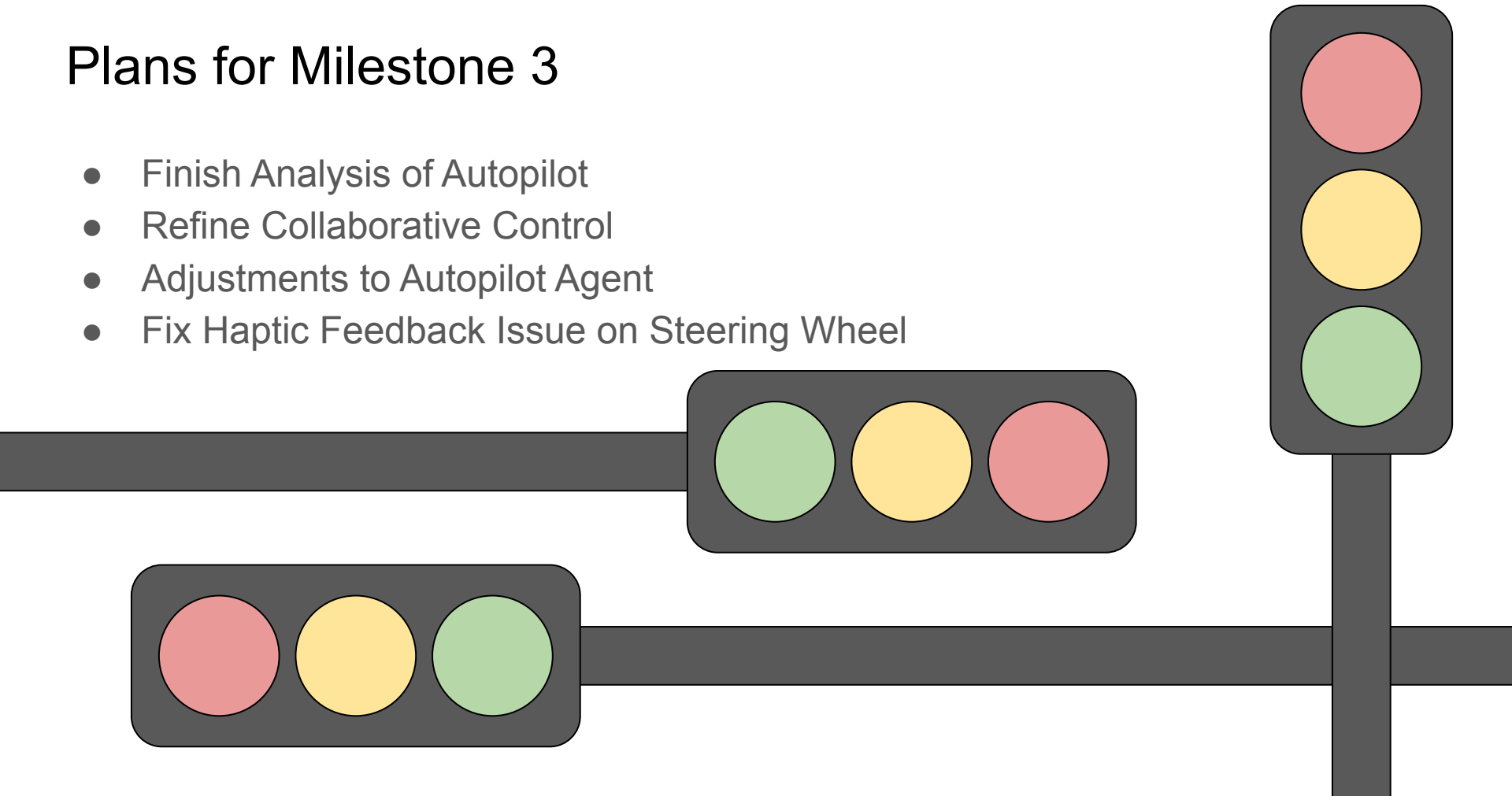- Using type two unless something changes
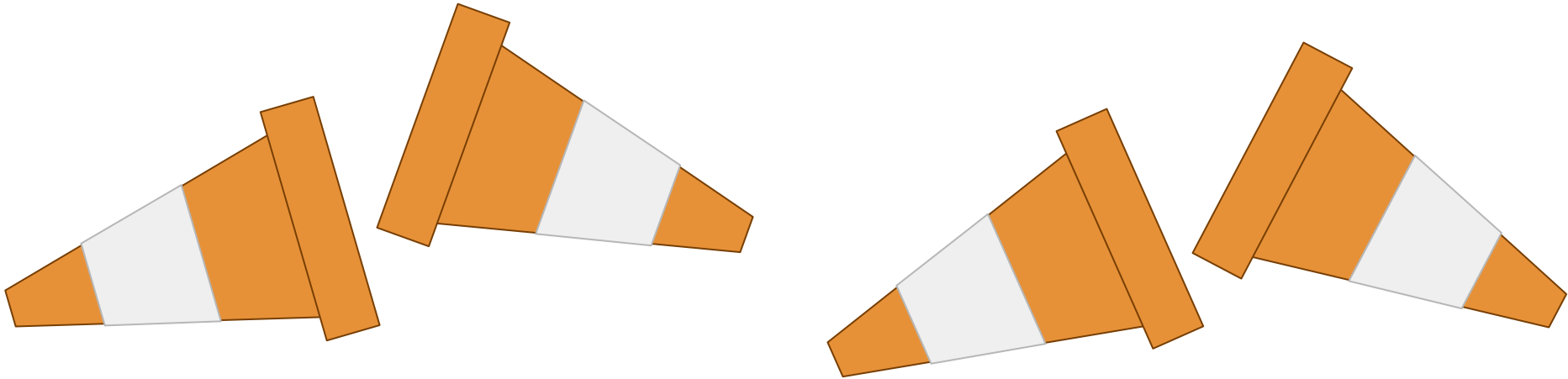
Create a New Viewpoint of Driver's Seat
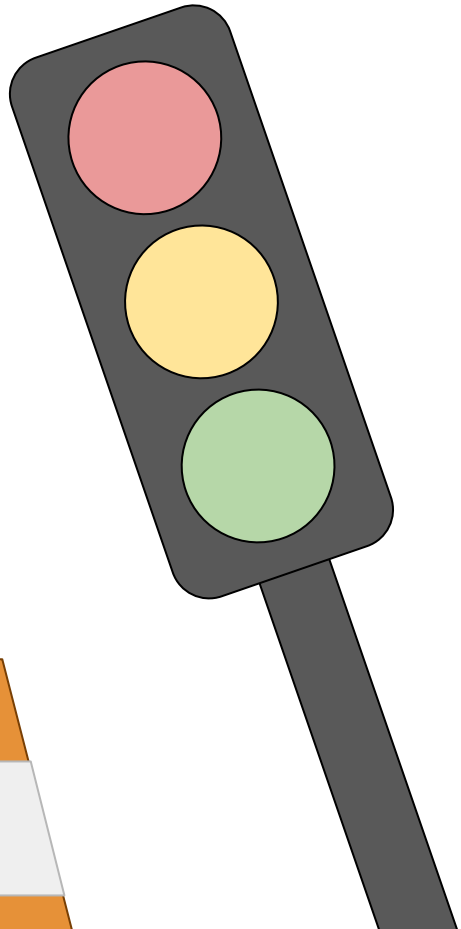
- The default viewpoints were as follows:
    - 3rd person view behind car
    - Side of car
    - Front bumper of car
- The team needed an in-car view, so a new viewpoint was created

Plans for Milestone 3

- Finish Analysis of Autopilot
- Refine Collaborative Control
- Adjustments to Autopilot Agent
- Fix Haptic Feedback Issue on Steering Wheel

Questions?