**Objective:**

The objective of our project is to develop a controller for the GRAIC simulation environment that handles both planning and control. Our controller should maneuver around the track in the minimum amount of time possible, avoiding obstacles such as other cars and pedestrians. We aim to develop a robust controller such that it is able to handle different simulation runs on different tracks while being able to control the vehicle's velocity between two predetermined numbers.

**System Outline:**

We will be using the CARLA simulation environment to simulate the movement of a specific model of a car around a specific track. We were able to set up the simulator after following the steps outlined in the GRAIC Installation Guide. None of us have directly worked with CARLA before, it may present a challenge early on in the project. Other challenges that we could face in the future would be adjusting the velocity of the vehicle such that it does not veer off track or start toppeling after taking a turn. Since we also aim to ideally implement the car following the racing apex line, this may be a challenging task to ensure that the car takes the right path across the curve without colliding with road boundaries, other cars or pedestrians.

**Milestones:**

| Dates | Milestones |
| --- | --- |
| October 23 - November 5 | * Setup CARLA Simulator * Project Pitch Presentation |
| November 6 - November 19 | * Implement Basic Functionality for the car to move around the track (Ideally get obstacle avoidance figured out) * Milestone Report |
| November 20 - December 6 | * Implement obstacle avoidance * Ideally implement more complex features such as following a racing line or even neural net implementation * Final Project Presentation * Final Project Video |

**Roles:**

* Devul - Controls
* Ritvik - Racing Apex
* Aumkar - Obstacle Avoidance