

### Term 3 Project 1 Path planning Project

To complete this project the vehicle must meet the below

1. It must NOT conflict to other vehicles.
2. It must NOT exceed 50 MPH.
3. It must be in the road lanes except for lane change.
4. It must NOT experience total acceleration over  $10 \text{ m/s}^2$  and jerk that greater than  $10 \text{ m/s}^3$ .

1 and 2. NOT conflict and exceed 50 MPH

To avoid conflicting to other vehicles, I made the vehicle decrease speed if it is too close to the front vehicle.(main.cpp line 320 – 341)

3. Be in the road lanes

I made the vehicle be at the 2 m, 6 m, or 10 m, respective to the left, the center, and the right lane. Because each lane width is 4 m.(main.cpp lane 400 – 402)

4. NOT experience total acceleration over  $10 \text{ m/s}^2$  and jerk that greater than  $10 \text{ m/s}^3$

To limit the acceleration and the jerk, I made the vehicle gradually speed up and down.  
(main.cpp lane 208, 317 – 341)

The week point of this program

The vehicle gets hunting when it has vehicles ahead and sideways.

To modify that I think it follows the speed of the front one instead of decrease its speed when it find the one ahead.