

# CarND Path Planning Project

Jason Selfe - August 2017

## HARDWARE USED

MacBook Pro  
2.7Ghz intel Core i5  
8GB RAM  
Intel Iris Graphics 6100 1536MB

## COMPILATION

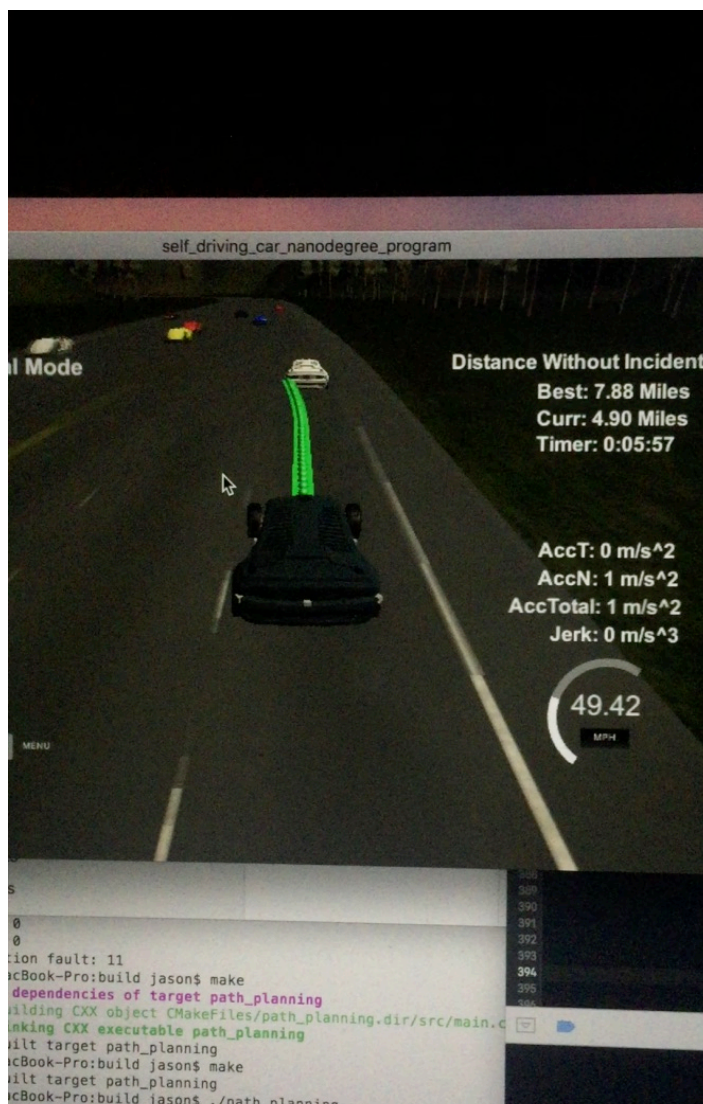
The code compiled all ok on my hardware mentioned above.

## Valid Trajectories

### Criteria

- The care is able to drive at least 4.32 miles without incident
- The care drives according to the speed limit
- Max Acceleration and Jerk are not Exceeded
- Car does not have collisions
- The car stays in its lane, except for the time between changing lanes
- The car is able to change lanes

Supplied image below from a run of the code that shows above criteria are met.



## **REFLECTION**

**The code model for generating paths is described in detail.**

From the highwayman.csv we get the waypoints that are about 30m apart. The points are assigned to a spline rotated along X (to avoid vertical asymptote) in Frenet. Some previous points are attached also to help smooth velocity between points. Car is aligned to this then all is rotated and unsolved back to original mapping space to go to simulator. (codelines 419-550)

Every cycle, being about 20milliseconds, we look in our lane (code lines 352) and check if in Frenet space there are any cars that getting too close to us in front. If so we start slowing down a little more each cycle till condition is not valid. (code lines 407-415).

We also look into the lanes that we could change into to get around car in front and if they are safe to change into we take the new lane. (code lines 357-398). This logic looks to the lane to the left and the right of the current lane for cars in the predicted space area. Its set from a distance in Frenet space in front and behind our car position> (code lines 281-337)