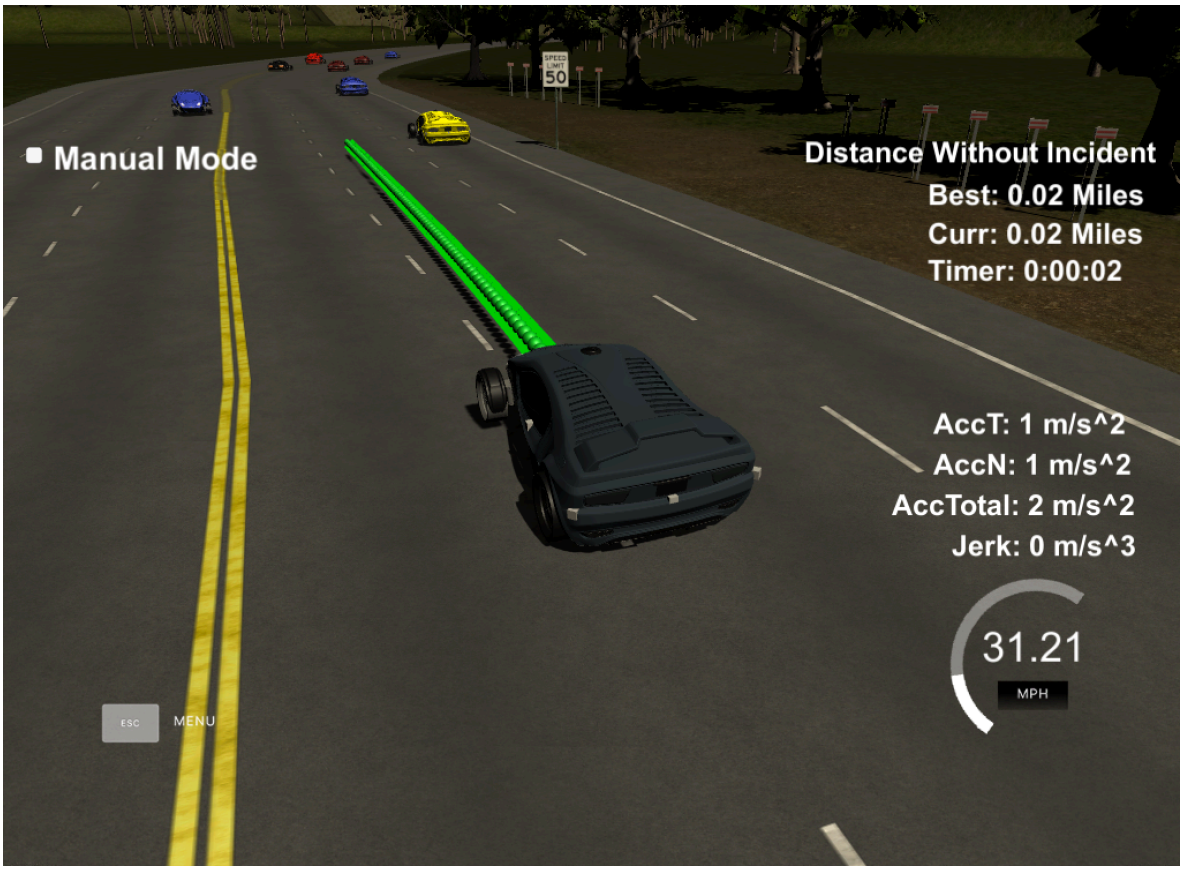
In my model, I take the data from the sensor fusion module and analyse them to decide what the vehicle should do. The path I have implemented consists of 100 different point. First we check using the s coordinates of the cars if a car is close to us. If its not we can go max speed otherwise we check if we can change lanes. This happens by first checking if there is car in the intended lane and then perform the action. If we can not change lanes we break and match our speed to the car in front of us.

How we know if a car exists ?

I used a method proposed by classmates to distinguish the lanes with three different integers. What I did is the following:

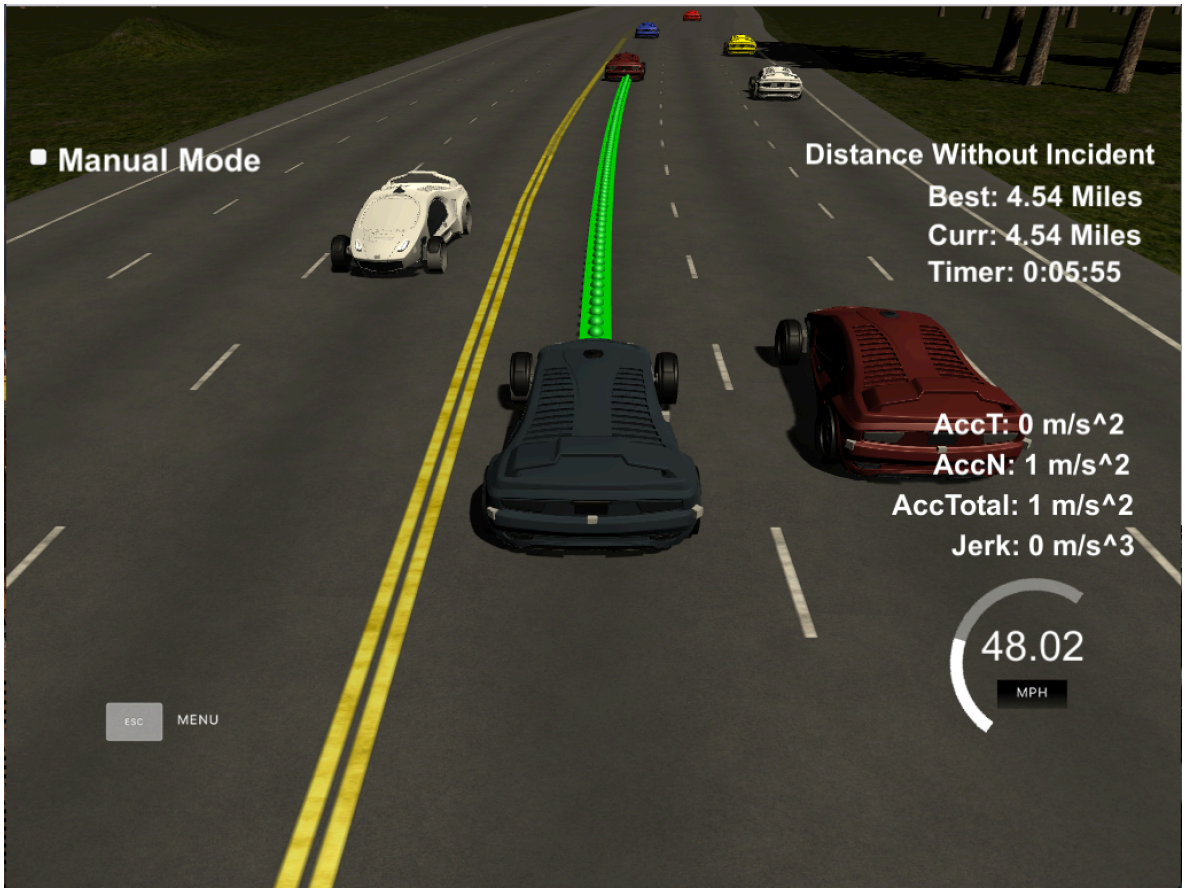
left lane = 0 $0 < d < 4$
center lane = 1 $4 < d < 8$
right lane = 2 $8 < d < 12$

Why I consider the road to be 12 ? That comes from experimenting different values. 12 seemed to be the most appropriate. Here is an example of considering the road 15:



We can see that although the car thinks its in the centre lane its almost in the left.

Final result:
Successful 4.54 miles


Manual Mode
Distance Without Incident
Best: 4.54 Miles
Curr: 4.54 Miles
Timer: 0:05:55
AccT: 0 m/s^2
AccN: 1 m/s^2
AccTotal: 1 m/s^2
Jerk: 0 m/s^3
48.02
MPH
ESC
MENU