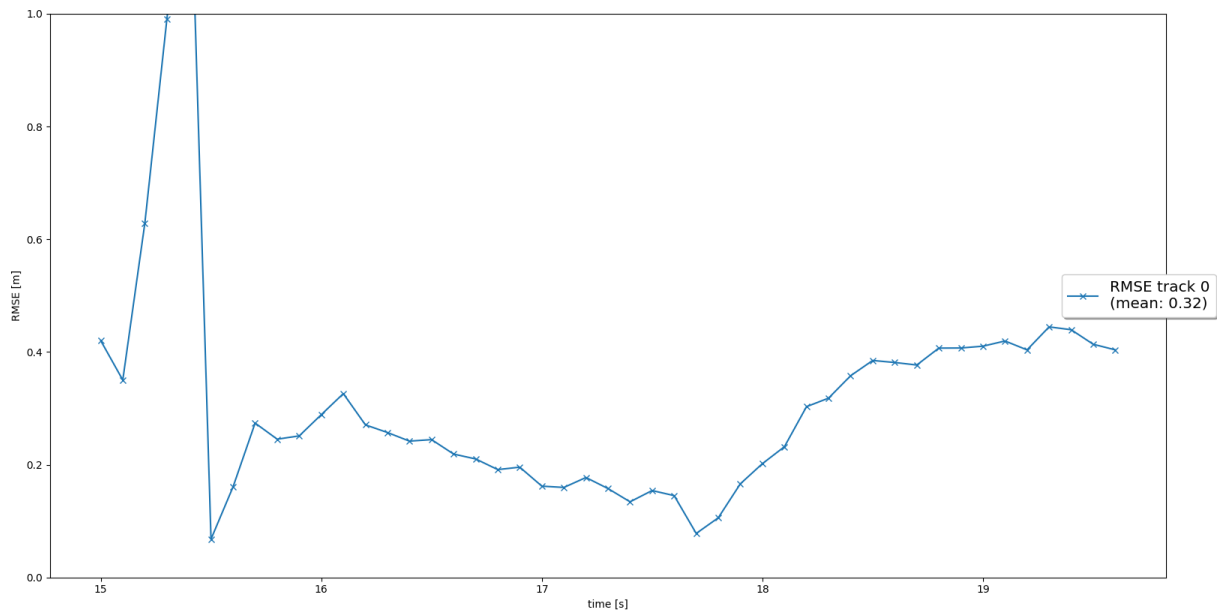
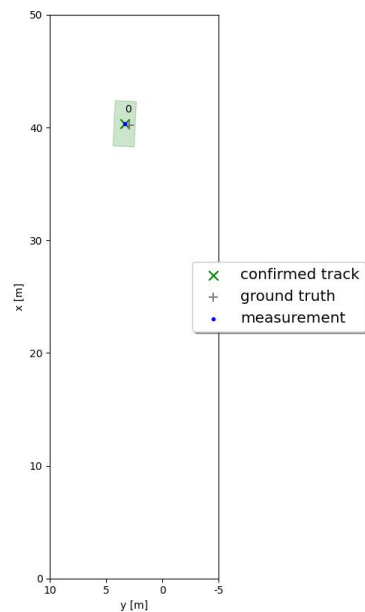


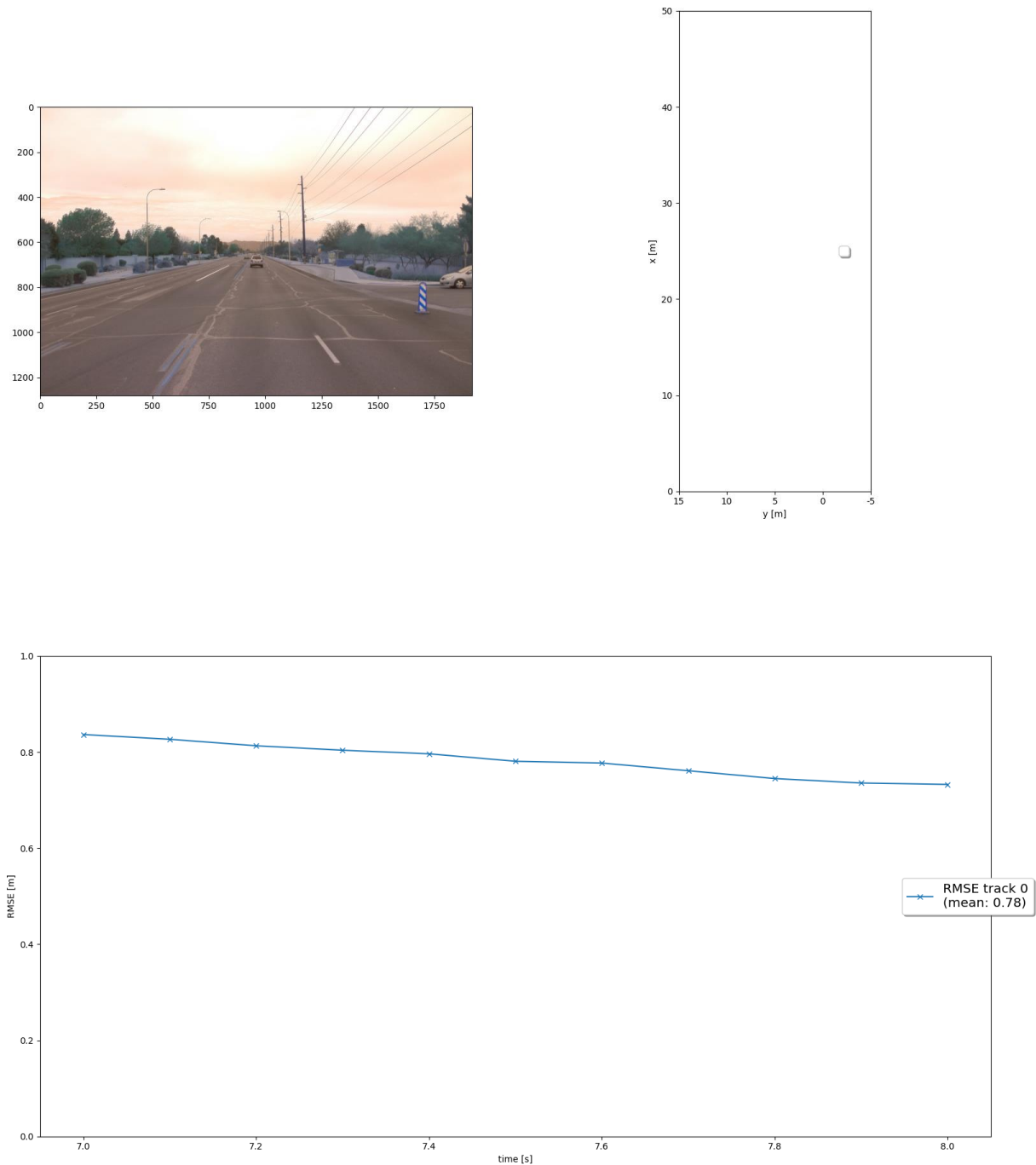
Sensor-Fusion Final Project Writeup

1-In the following are the RMSE results from each step:

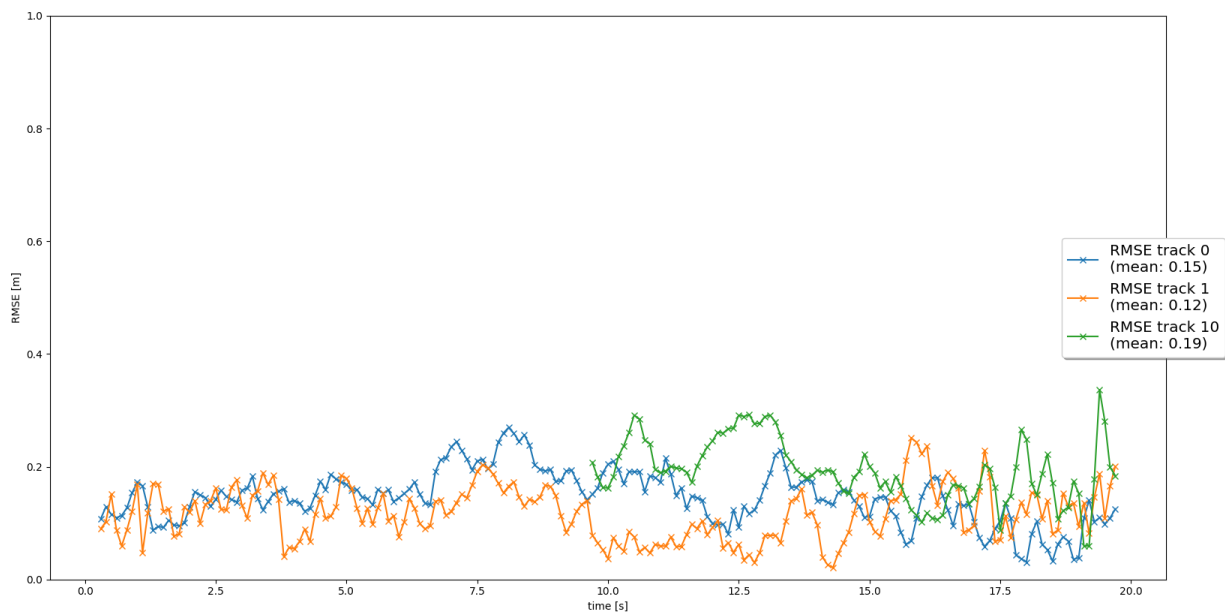
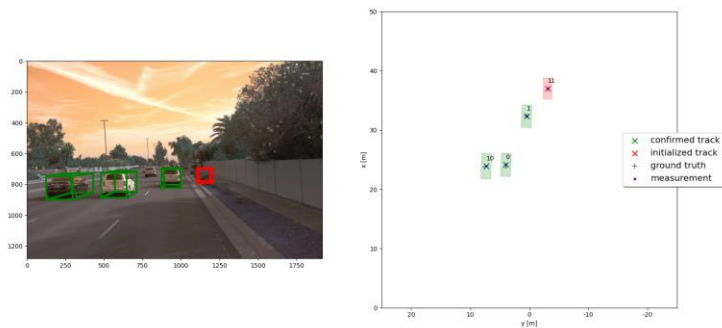
In step_1, I've implemented the Predict & Update Functions and some other functions in the EKF Class while tracking one vehicle.



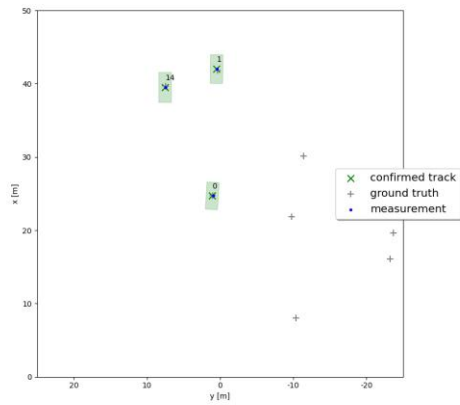
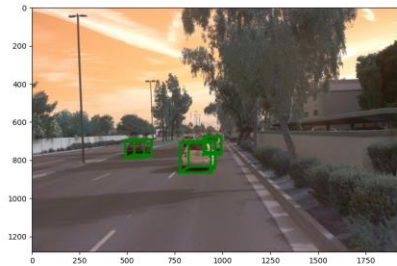
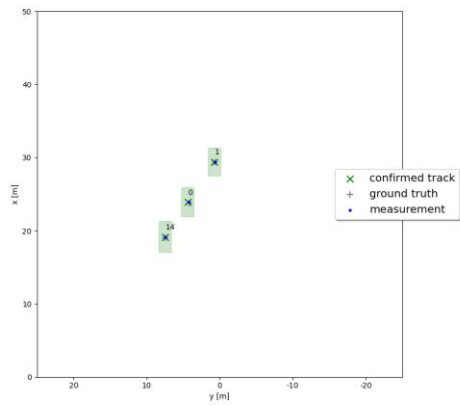
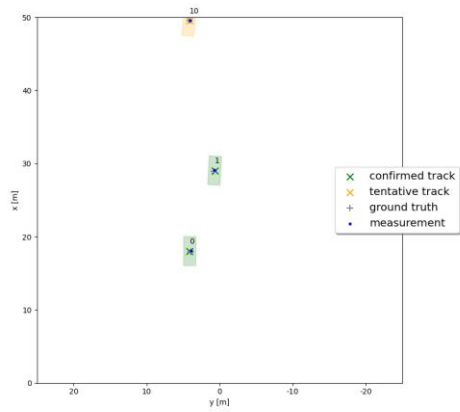
In step_2, I've completed the initialization in the Track Class, and increasing the track score, assign track state, and delete tracks in the Trackmanagement Class also while tracking one vehicle.

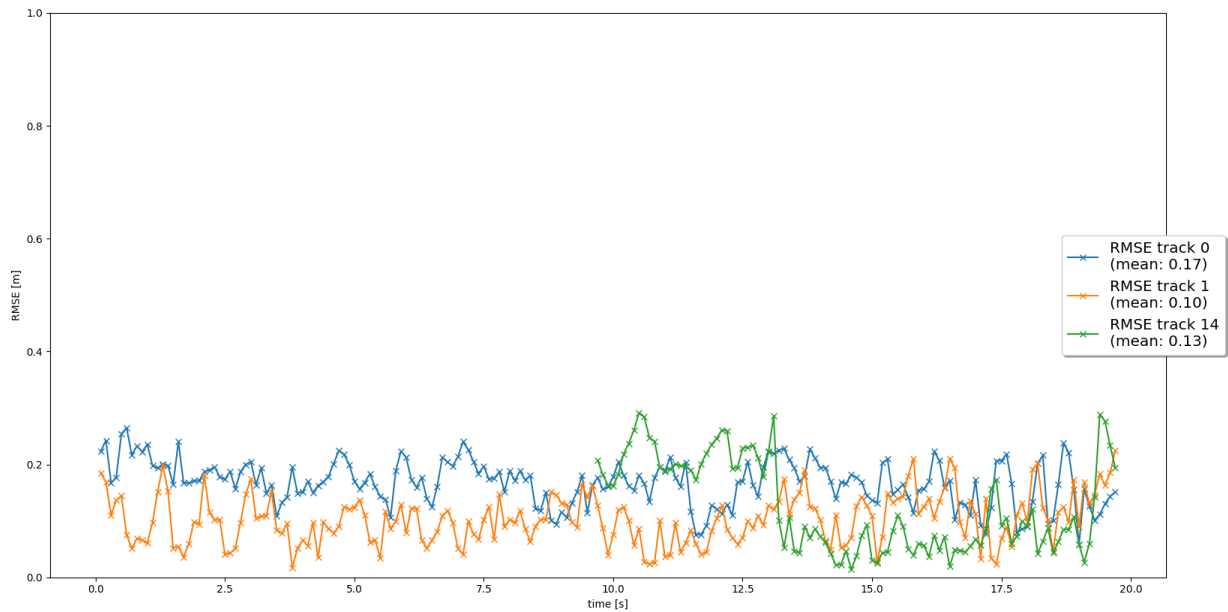


In step_3, I've associate each track with its measurement based on the single nearest neighbor association and gating based on Mahalanobis distance.



In step_4, I check if the object can be seen in the sensor Field-of-View, then fuse the Lidar with the Camera detections to complete the sensor fusion program, this part is the most challenging one in this project as the steps for incorporating other sensor with the Lidar wasn't like that easy for me to understand.





2-Of course fusing more than one sensor –for example Lidar + Camera- enhances the vehicle awareness of the surrounding environment as every sensor type complement the other because each sensor type has its own strengths & weaknesses, so combining more sensor types will increase the robustness of our system behavior in different situations.

3-In my point of view one of the challenges that Sensor Fusion system face in real life scenarios is how to model each sensor type correctly and how we fuse its data with other sensors accurately, as some sensors parameters are selected by experience and this may work good in some situations but not surely for all conditions.

4-I think adding a 3rd sensor type like Radar or IR Camera or both will increase the system robustness in more various driving situations & conditions.