**Sensor Fusion**

**1] Changed to be made to the main.cpp:**

* You must change the “*DATA\_FILE\_PATH*” variable at *line 20* in main. The value has to be absolute path to the data file.

**2] Command to run the program:**

* Command to run the Kalman filter:

“./TelenavSensorFusion.exe kalman\_filter”

* Command to run the Particle filter:

“./TelenavSensorFusion.exe particle\_filter”

**3] Output of the program:**

State vector = x\_value y\_value

Lidar measurement = lidar\_measurement\_x lidar\_measurement\_y

State vector = x\_value y\_value

Radar measurement = radar\_measurement\_x radar\_measurement\_y

===========iteration number = 1============

…

…

…

State vector = x\_value y\_value

Lidar measurement = lidar\_measurement\_x lidar\_measurement\_y

State vector = x\_value y\_value

Radar measurement = radar\_measurement\_x radar\_measurement\_y

===========iteration number = n============

**4] Approach:**

* Criteria used for selecting the Lidar and Radar measurement for each iteration is: min(Euclidean (Lidari, Radarj)). We calculate the Euclidean distance of every Lidar and Radar combination in the txt file for every iteration.
* In the txt file I did not find any absolute delta y’s to be 1 and hence I have not taken that as a criterion to find the sensor measurement for an iteration
* State vector used for Kalman filter is a 2d State Vector [x-pos, y-pos] where x is the x-coordinate and y is the y-coordiante
* Delta t used is 0.1
* Lidar Measurement Covariance is 0.02 meter.
* Radar Measurement Covariance is 0.1 meter.
* Assumption used is that I have not taken velocity into consideration and hence the velocity of the vehicle is constant
* For particle filter the number of particles used is 25
* For particle filter I have hardcode the landmark positions “*vector<vector<float>> land\_mrks = {{-50, -25}, {50, 25}};*”
* These land marks position is used to update the weights of the particle