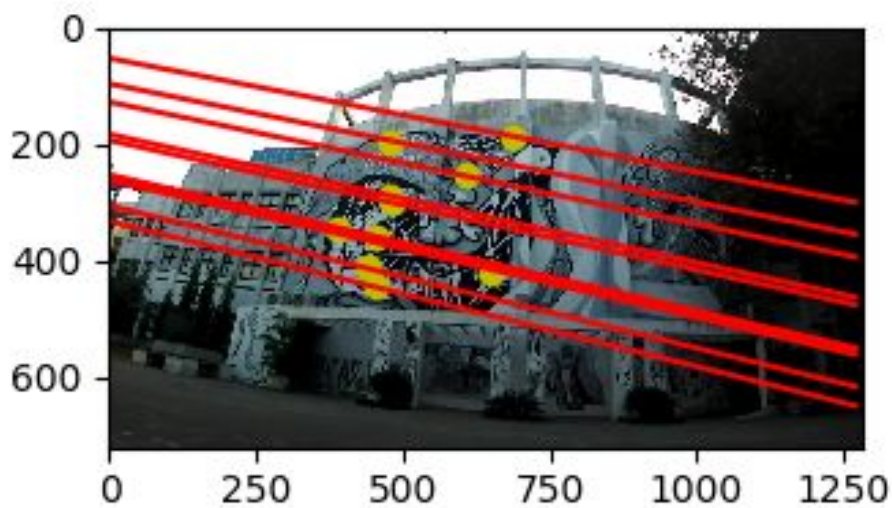
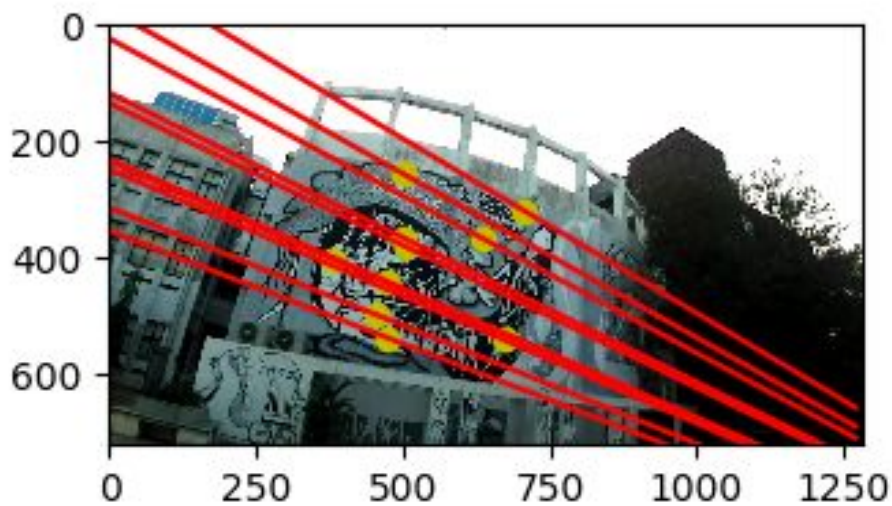


Mobile Robotics Assignment 2 Report

Q1. Part 1: The task draw the Epipolar lines from the given points given the fundamental matrix given.

The problem can be solved by calculating the Epipolar lines using F matrix and points provided. The Epipolar lines are $e1 = F \cdot p2$ and $e2 = F \cdot F \cdot p1$

Results:



Part 2: The locations of the Epipoles can be calculated by using F matrix, They can be found out by the eigenvectors of the F matrix. The if

$U, D, V = \text{svd}(F)$

Then the last vectors of U and V are the epipoles

So we find two Points e and e' such that

1. $F \cdot e = 0$

2. $F^T \cdot e' = 0$

e : $[-9.99958691e-01 \ -9.08728264e-03 \ 1.91611592e-04]$

e' : $[8.75919893e-01 \ 4.82456398e-01 \ 4.05675052e-04]$

This part is done by Anurag Sahu

Q2. Following the Visual Odometry Process to find the path of the moving vehicle from the Sequence of Images.

Steps to run the file:

1. Make sure that the images and ground truth files have been downloaded.
2. Also in the code change the K matrix.
3. Keep all the images in a folder named images and ground truth file named ground_truth.txt and code and all of them
 - Image
 - ground-truth.txt
 - final_script.py

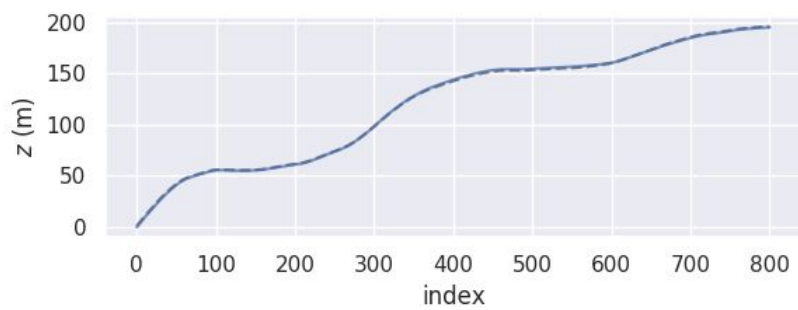
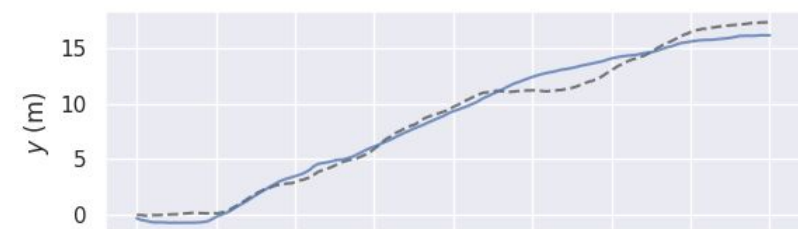
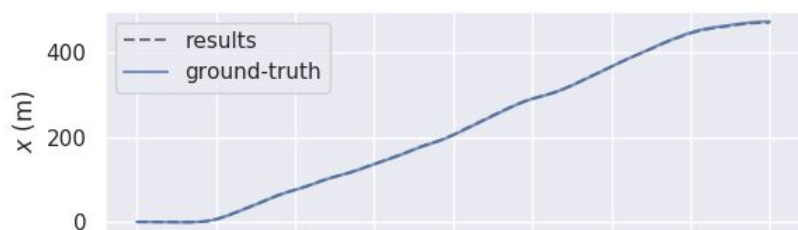
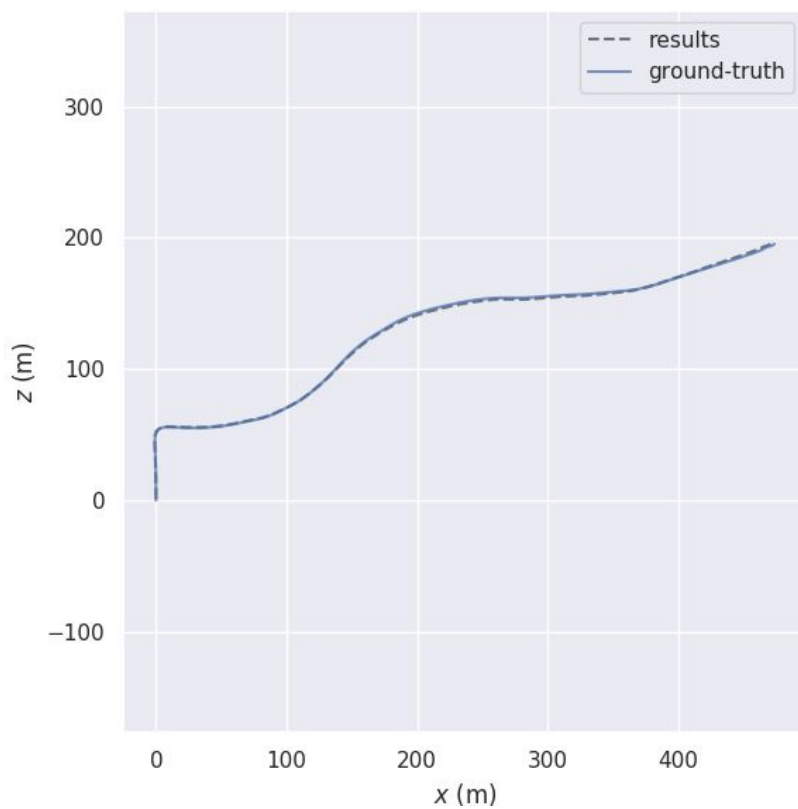
In the same folder named q2

4. Run python scripy.py
5. This will generate a file results.txt and plot the trajectories as well using evo.
6. You can also run
 - evo_traj kitti ground-truth.txt --ref results.txt -va --plot --plot_mode xz

For plotting the Trajectories

Results: 1. results.txt in the ./q2/

2. Image of Trajecotries



The Algorithm performed really well in predicting the X and Z but the Y part wasn't that good. Although the Cars in moving in X and Z directions of the Camera hence there won't be much effect in the trajectory of the camera but if the camera would have had any motion in Y direction then the Algorithm would have really diverged.

This part is done by Anurag Sahu.