

Cmpt 412

Project 5

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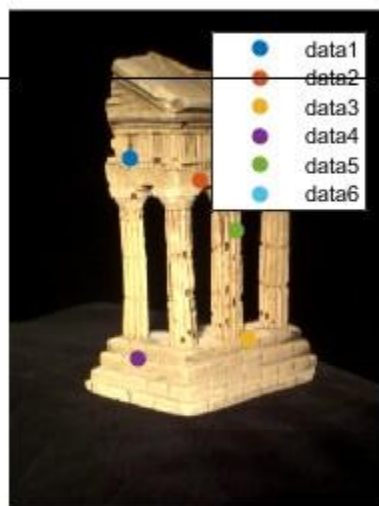
3.1.1 Implement the eight point algorithm

Running the test_eightpoint.m script would result in the following:

F matrix:

```
>> test_eightpoint
    0.0000    -0.0000     0.0000
   -0.0000     0.0000     0.0114
    0.0002    -0.0109    -0.0455
```

displayEpipolarF.m results in the following:



Select a point in this image
(Right-click when finished)



Verify that the corresponding point
is on the epipolar line in this image

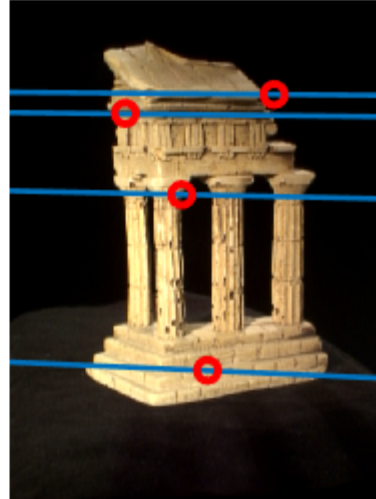
3.1.2 Find epipolar correspondences (2 pts)

Run the test_eightpointcorrespondence.m script to have the corresponding code:

For this function, I used the euclidean distance to find each point. The algorithm might have failed due to the lack of additional perspectives, since there might be some false positive points which would pass the euclidean distance algorithm.



Select a point in this image
(Right-click when finished)



Verify that the corresponding point
is on the epipolar line in this image

3.1.3 Write a function to compute the essential matrix (2 pts)

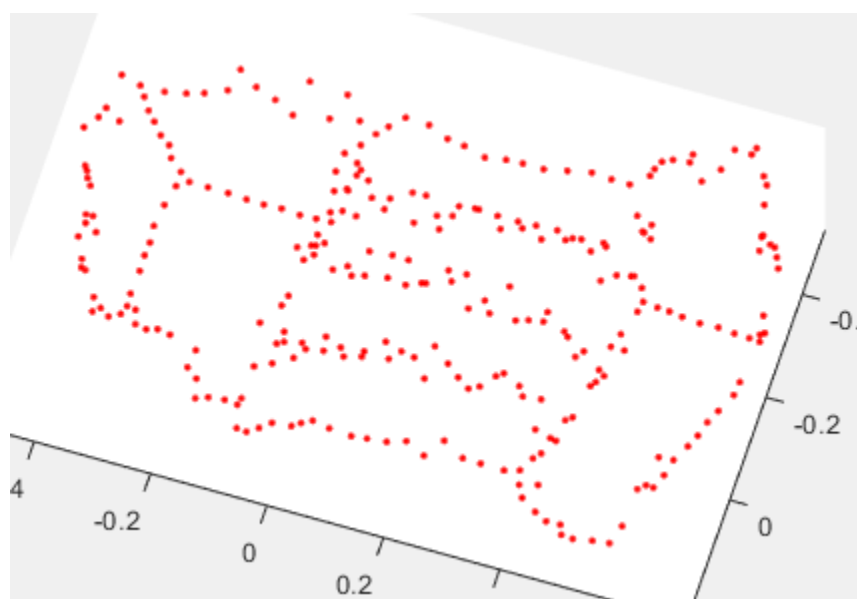
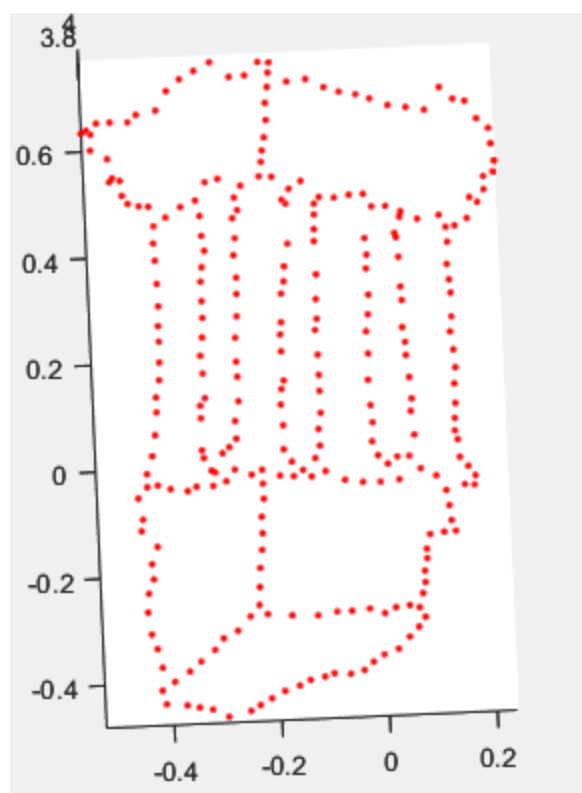
Running test_essentialMatrix.m matrix would result in the following:

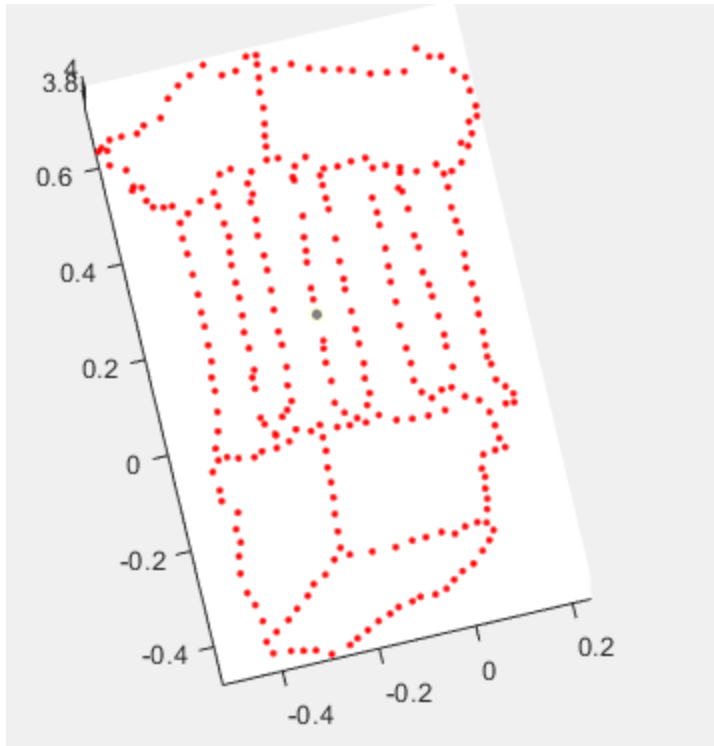
E matrix

```
>> test_essentialMatrix
    0.0303    -2.5787    -0.3530
   -1.8614     0.0103    16.9652
   -0.0540   -17.1786    -0.0195
```

3.1.4 Implement triangulation (2 pts) and 3.1.4 Implement triangulation (2 pts)

Running the testTempleCoords.m script would result in the following:



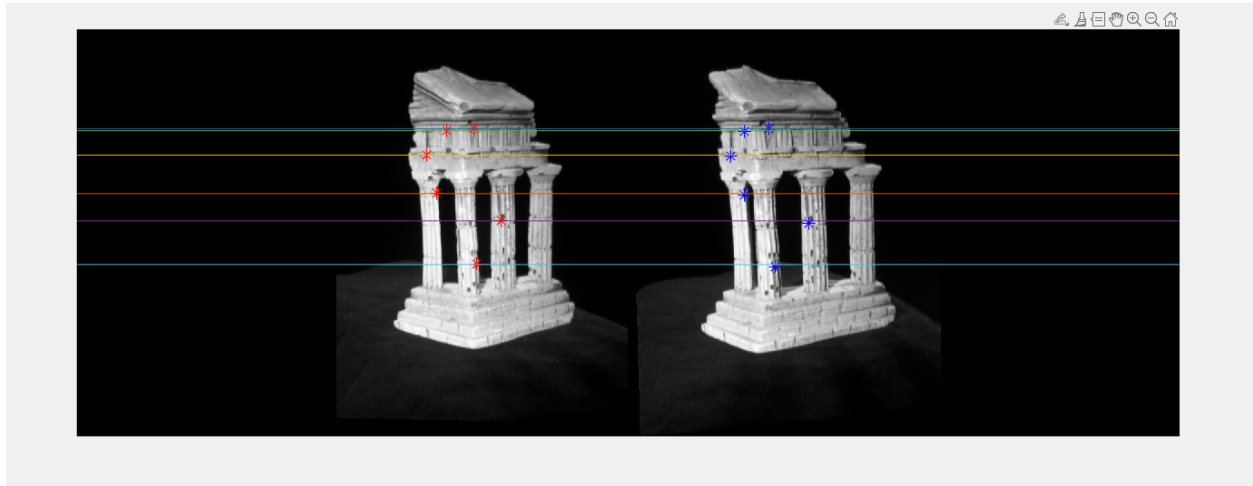


```
>> testTempleCoords
Projections errors:
point 1
    0.1461

point 2
    0.1439
```

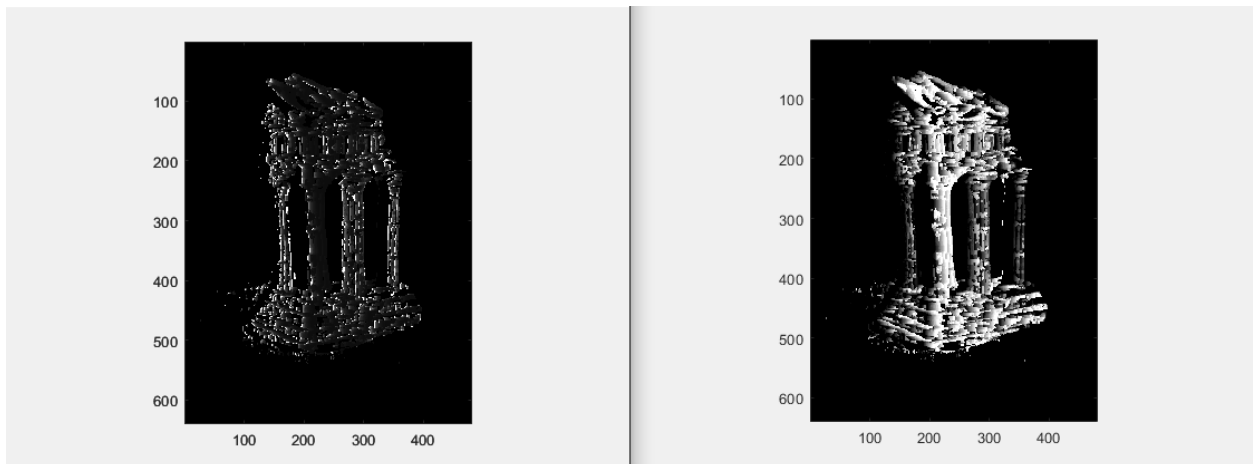
3.2.1 Image rectification (2 pts)

Running testRectify.m script results in the following:



3.2.2 Dense window matching to find per pixel density (2 pts) and 3.2.3 Depth map (2 pts)

Running testDepth.m script results in the following:



3.3.1 Estimate camera matrix P (2 pts)

Running the testPose.m script results in the following:

```
>> testPose
Reprojected Error with clean 2D points is 0.0000
Pose Error with clean 2D points is 0.0000
-----
Reprojected Error with noisy 2D points is 2.3451
Pose Error with noisy 2D points is 0.6661
```

3.3.2 Estimate intrinsic/extrinsic parameters (1 pts)

Running the testKRt.m script results in the following:

```
>> testKRt
Intrinsic Error with clean 2D points is 0.0000
Rotation Error with clean 2D points is 0.0000
Translation Error with clean 2D points is 0.0000
-----
Intrinsic Error with clean 2D points is 0.5053
Rotation Error with clean 2D points is 0.1295
Translation Error with clean 2D points is 0.6109
..
```