CMPT412 (Fall 2021): Project 3
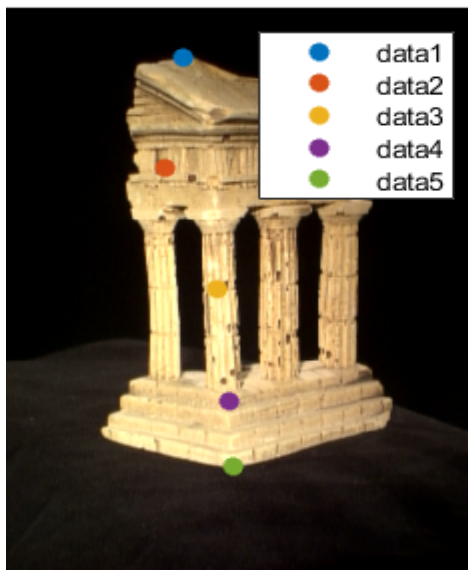3D Reconstruction
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3.1.1

F=

-3.13744067804639e-08	-6.81169395996358e-08	0.000190917544172764
3.73337917310435e-06	-1.29390364606953e-08	-0.0214622949559256
-0.000570183734199854	0.0206060451910314	0.0906566838668109

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

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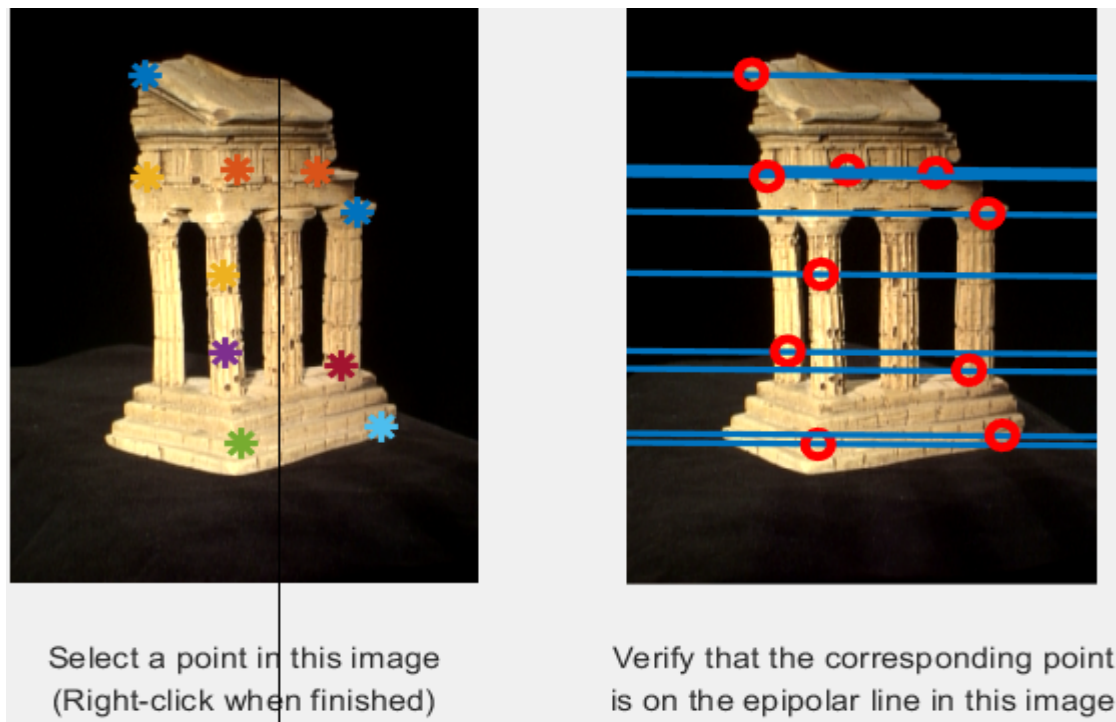is on the epipolar line in this image

3.1.2

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

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

Similarity Metric Used: Window Size Comparison(size = 25 pixels (25x25 window) from centered point x)
The most left pillar and second pillar from the left are consistently confusing because they share the similar epipolar lines and window images.

3.1.3

E=

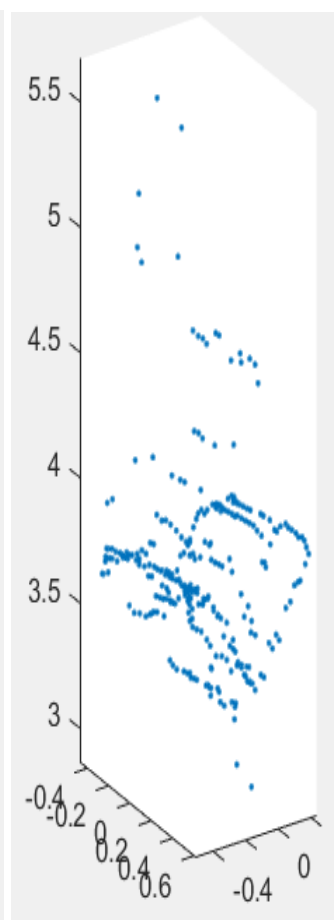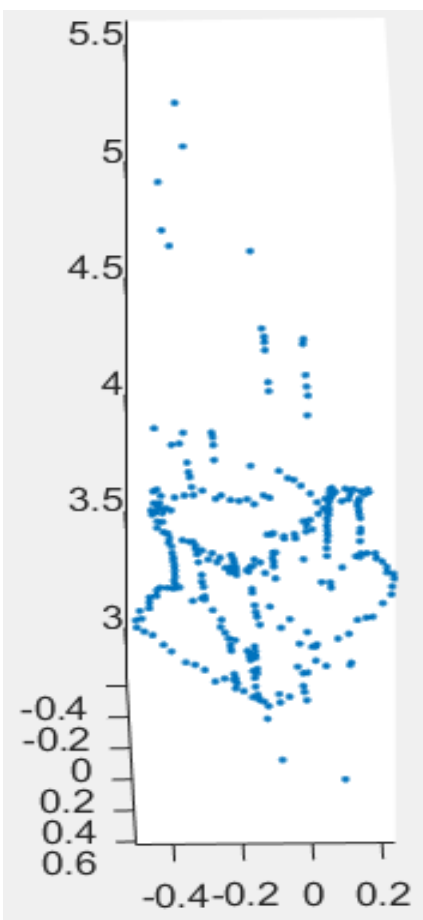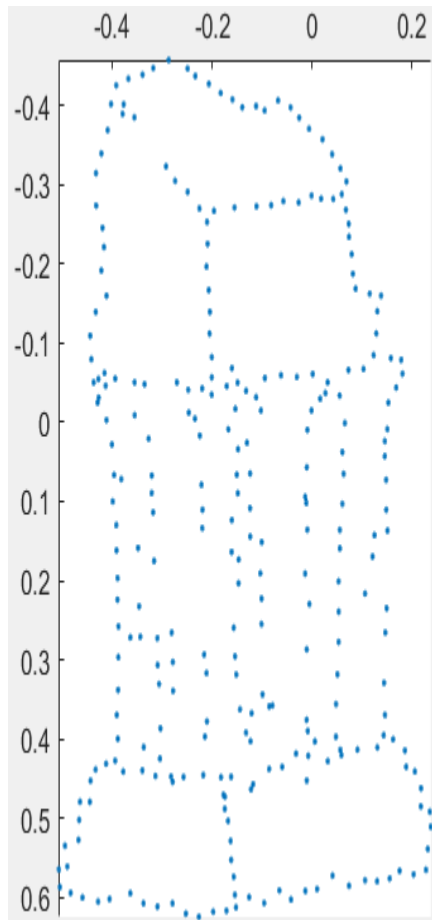| -0.0725	-0.1580	0.2503
8.6614	-0.0301	-31.0319
0.5200	31.4065	0.0345

3.1.4

Decided the second extrinsic matrix as a correct one because the result of the reconstructed 3d points had all positive numbers in the Z-axis.
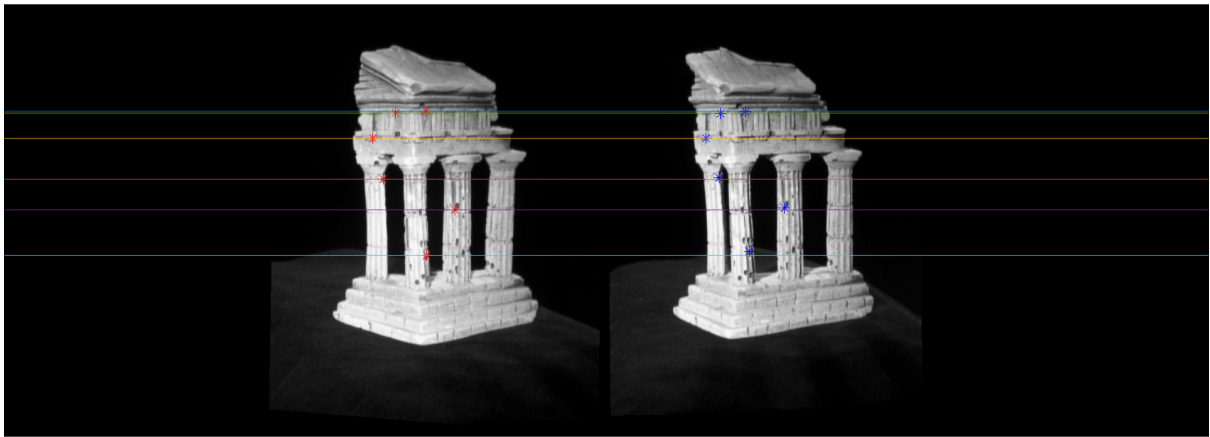reprojection error for pts1: 2.3668
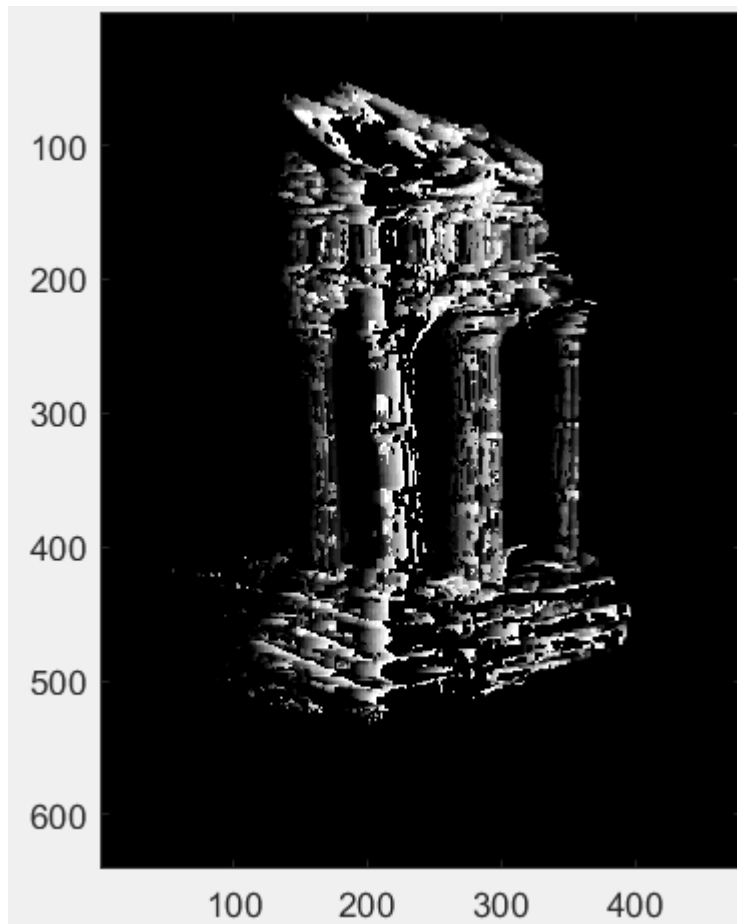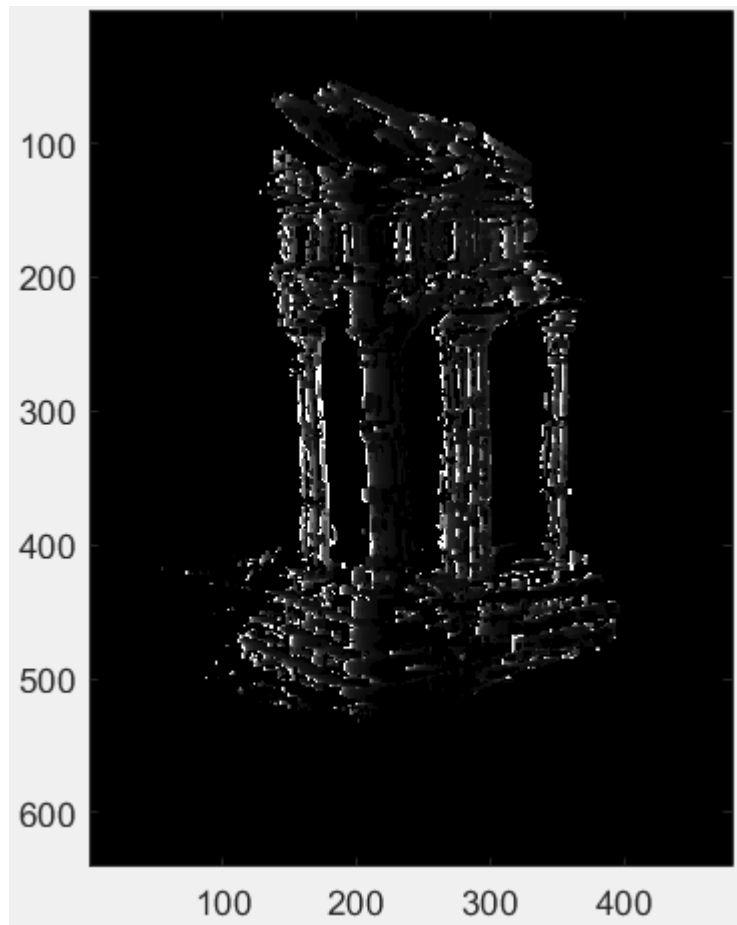reprojection error for pts2: 2.4326

3.1.5

3.2.1

3.2.3
Disparity Map

Depth Map

3.3.1

>> 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 2.3516

Pose Error with noisy 2D points is 0.1831

3.3.2

>> testKRt

Intrinsic Error with clean 2D points is 141.4214

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 141.9142

Rotation Error with clean 2D points is 0.1829

Translation Error with clean 2D points is 0.2097

3.3.3