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Computer Vision and Image Processing – CSE 573

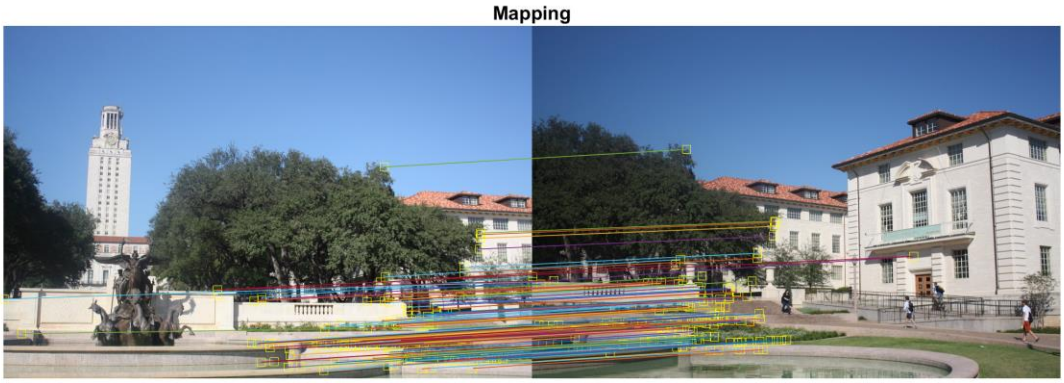
Homework 3

Homography and fundamental matrix estimation

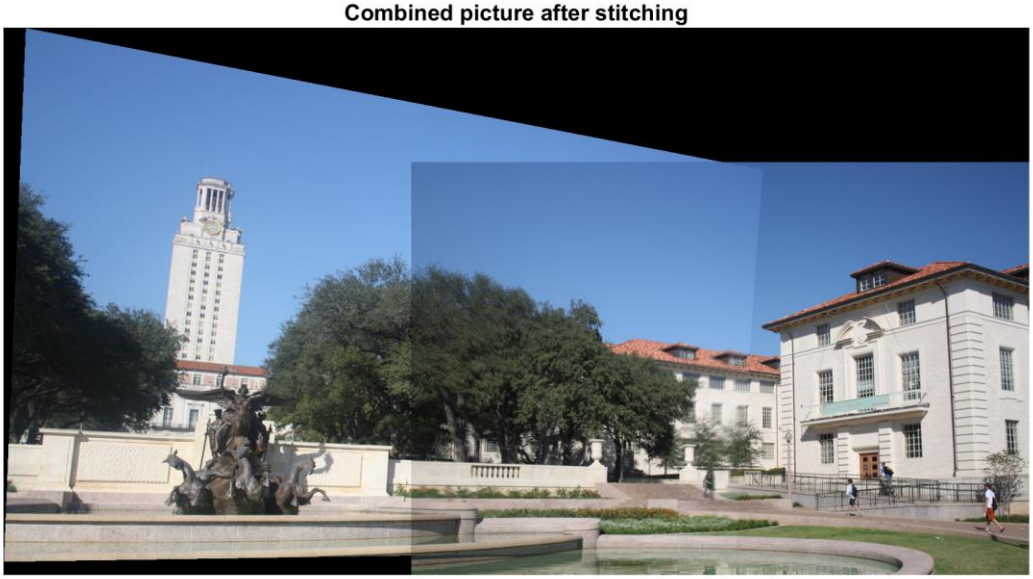
Part 1

All values were taken upon trying different values and then performing trial and error.

- Values of all parameters are as follows :
    - Sigma value for harris – 2
    - Radius value for harris – 1
    - Thresholhd value for harris – 0.035
    - No. of pixels made 0 around neighbourhood pixel for “flatten” (r) – 20
    - Number of matches – 150
    - How many random pixels are taken around a point – 4
    - Minimum Distance for an inlier – 10
    - Minimum inlier ration – 0.3
    - No. of iterations to run for – 150
- The number of inliers are 115 in this case and avg residual for the inlier is 0.77



Combined picture after stitching



Part 2

All values were taken upon trying different values and then performing trial and error.

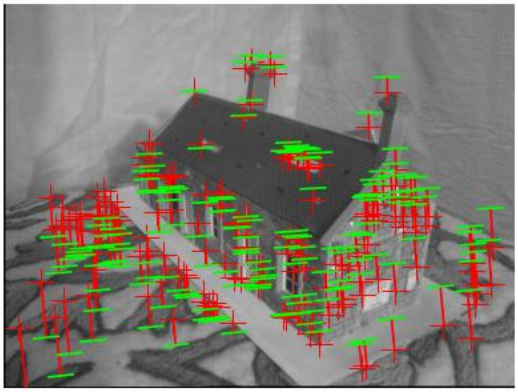
- Values of all parameters are as follows :
    - Number of matches – 168
    - How many random pixels are taken around a point – 8
    - Minimum Distance for an inlier – 35
    - Minimum inlier ration – 20/168 = 0.119
    - No. of iterations to run for – 1000

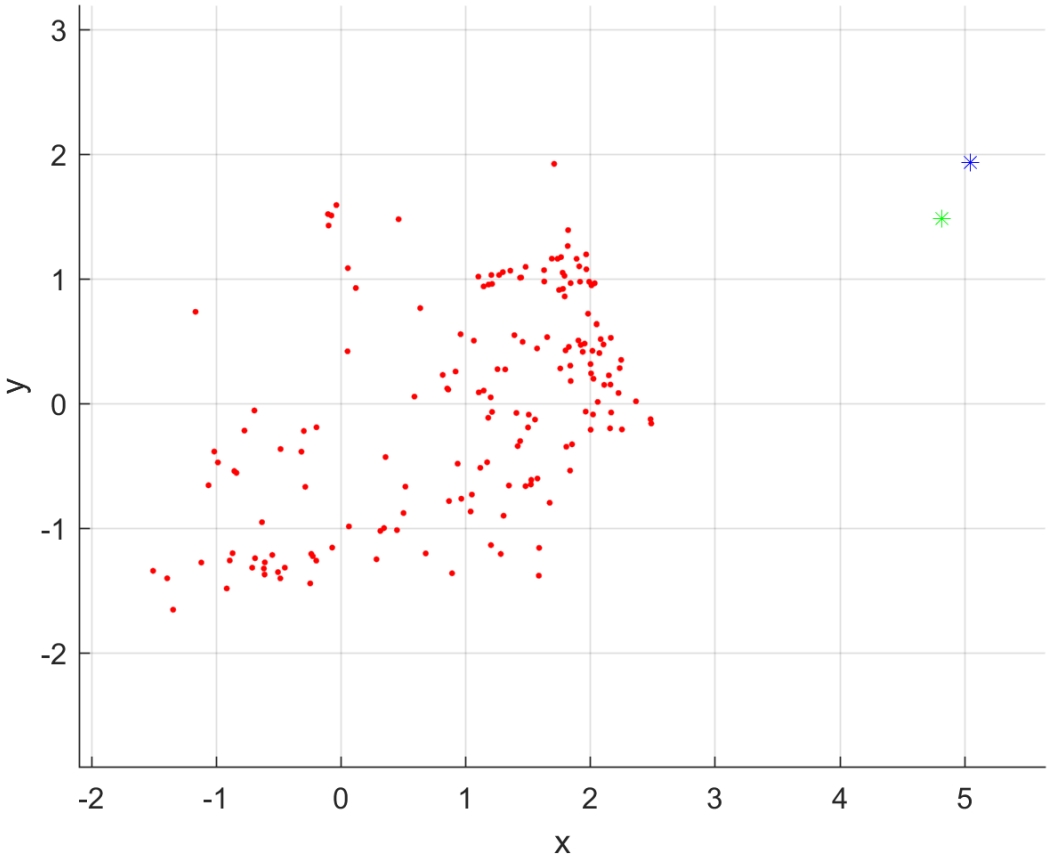
For normalized = true and ground_truth = true

Mean Inlier Residual– 14.59

Residual for img1 – 0.002

Residual for img2 – 0.16



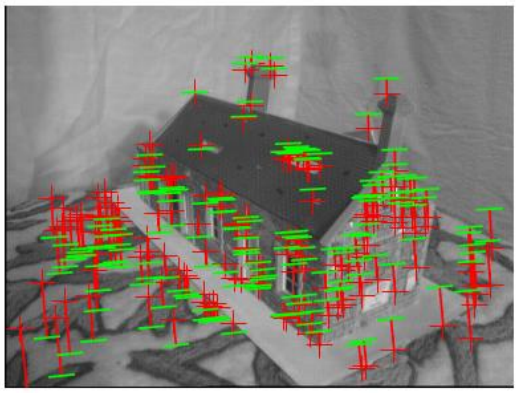

3
2
1
0
-1
-2
y
-2
-1
0
1
2
3
4
5
x

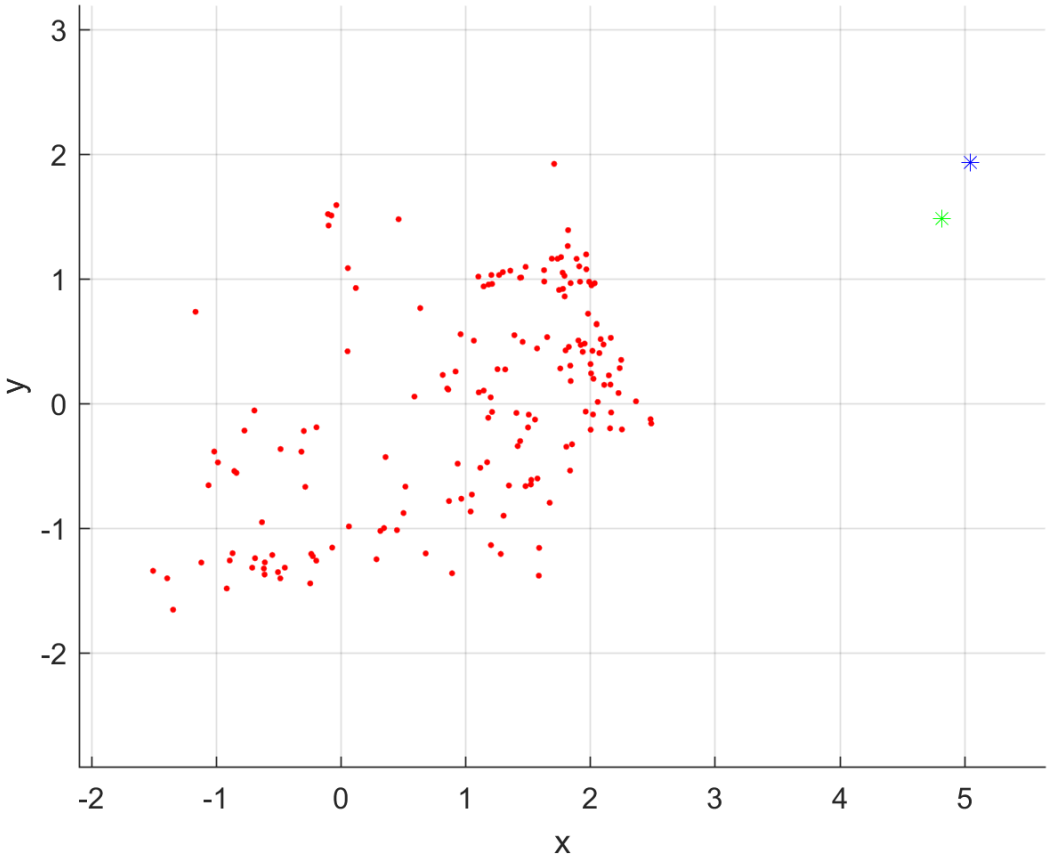
For normalized = true and ground_truth = false

Mean Inlier Residual – 13.70

Residual for img1 – 0.002

Residual for img2 – 0.156




3
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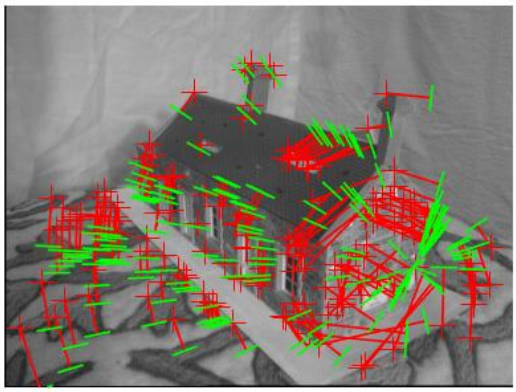
x

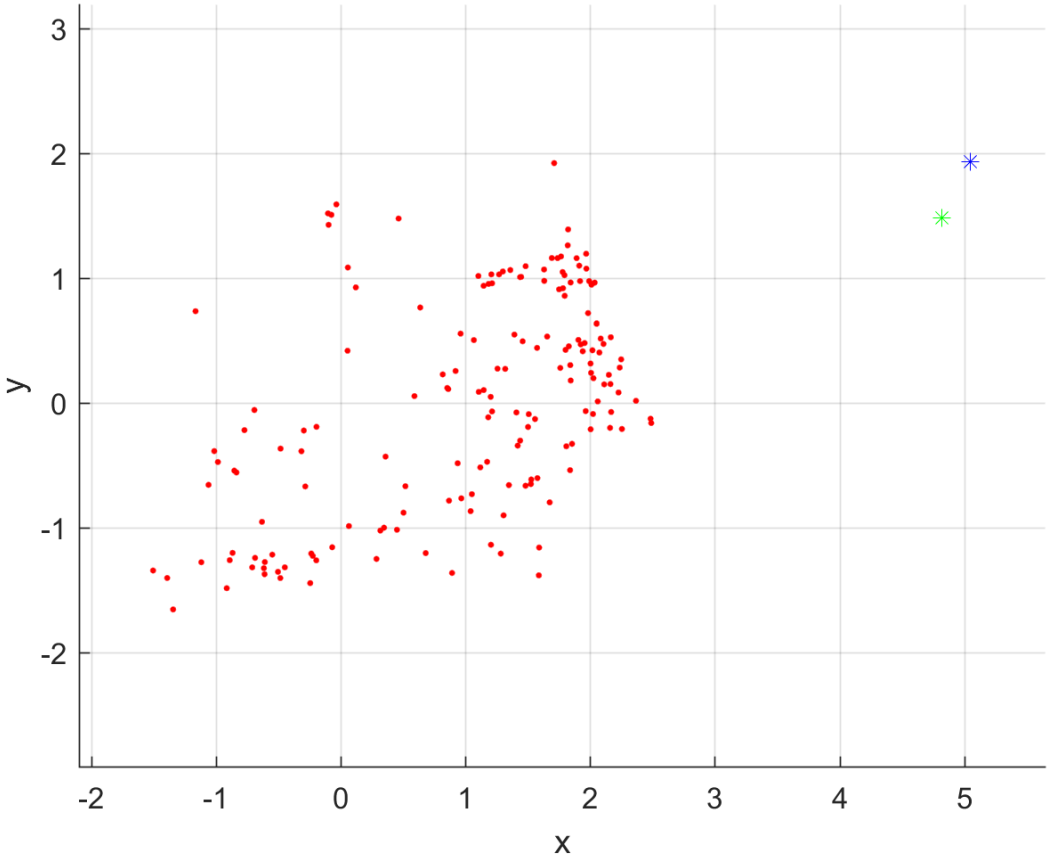
For normalized = false and ground_truth = true

Mean Inlier Residual – 26.75

Residual for img1 – 0.002

Residual for img2 – 0.156

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y
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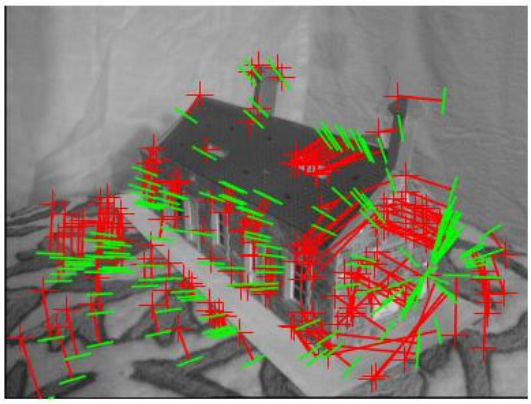
x

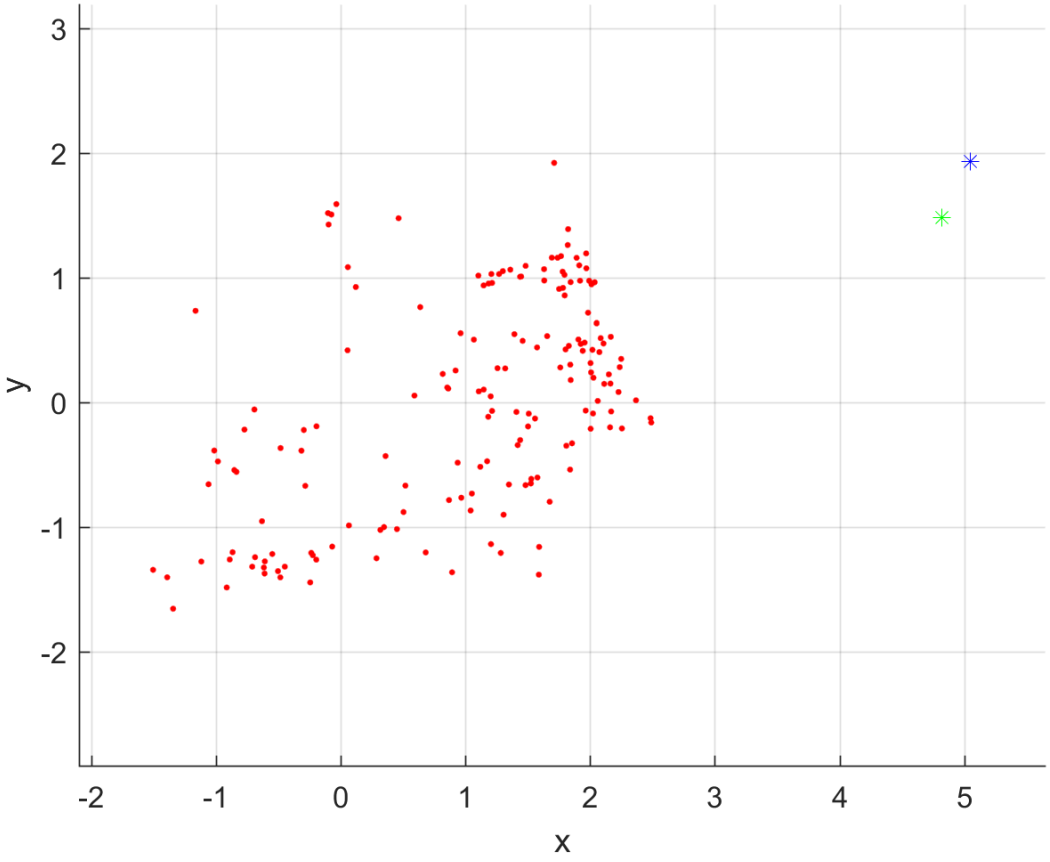
For normalized = false and ground_truth = false

Mean Inlier Residual – 26.75

Residual for img1 – 0.002

Residual for img2 – 0.156

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