200687M Vishwamith P.G.H Assignment 2

Q1)

Largest Circle Sigma value range: (0.1,2.8)

Center : (106, 257)

Radius : 16

Sigma : 2.8

Image is converted to gray scale for to detect blobs more accurately. For different sigma values gray image is pass through a Gaussian Blur and Laplacian Filter. A blob mask has created using a threshold. Using findCounter function the found counters have been drawn on the gray image.

A computer screen with many white and green text

Description automatically generated

Q2)

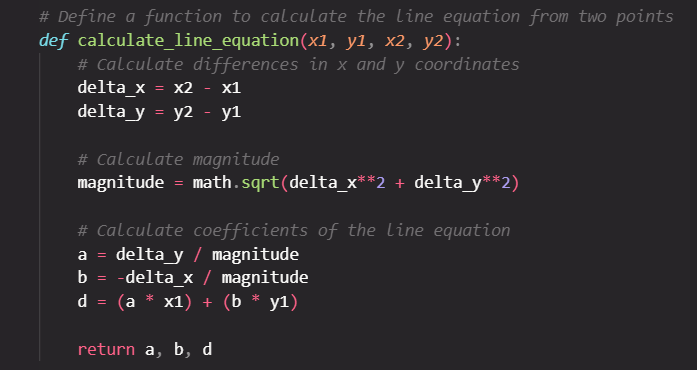
By considering the threshold for the error is 1 is a good parameter since the data points are spread between -15 and 15 on x,y axis.

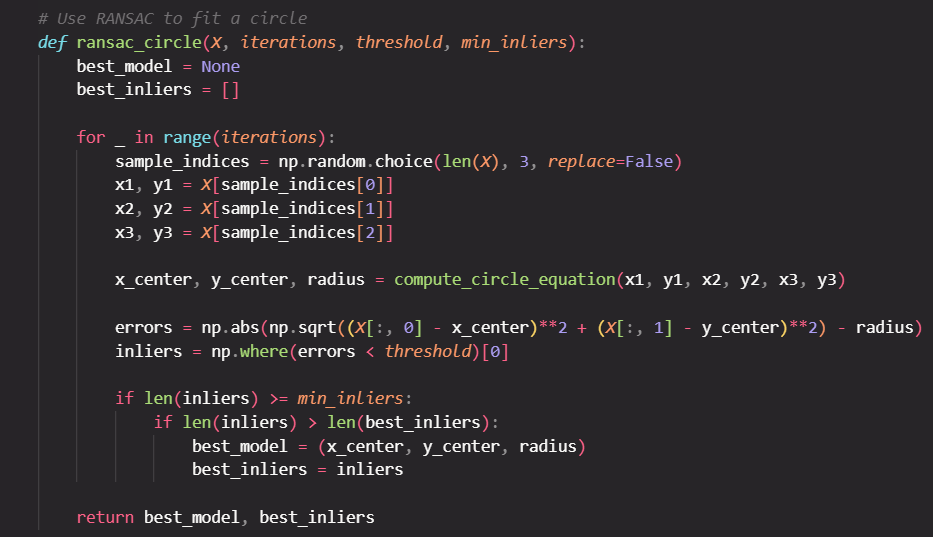
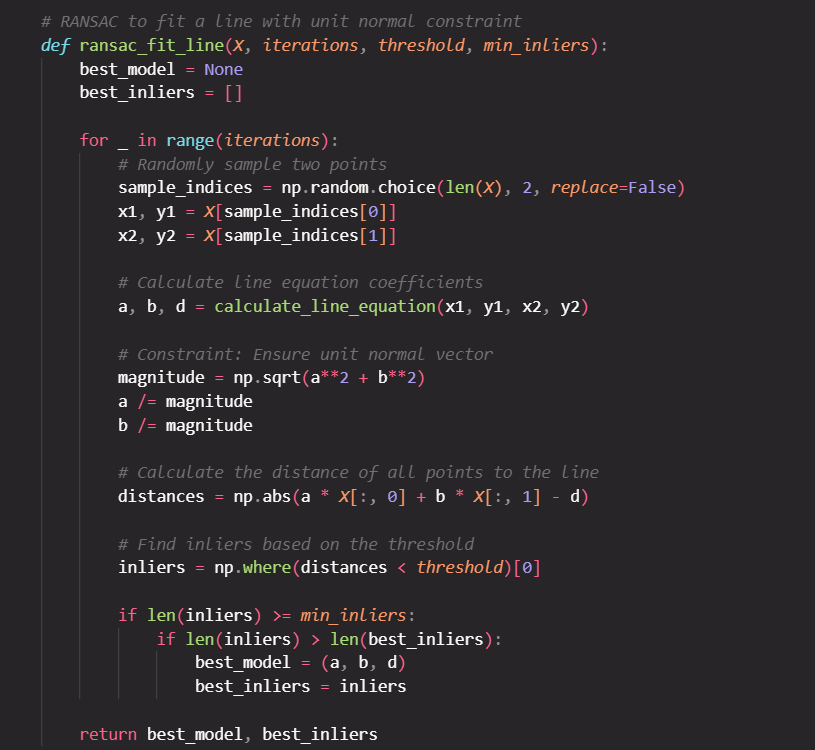
To calculate parameters of line and circle equation separate function have created. Separate RANSAC models have been created for line and circle.

A screen shot of a graph

Description automatically generated

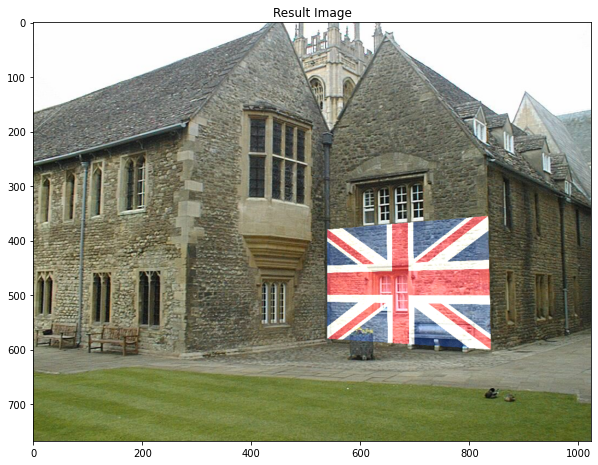
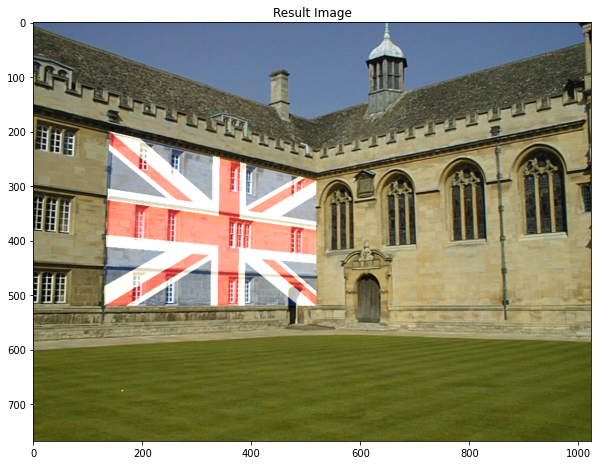
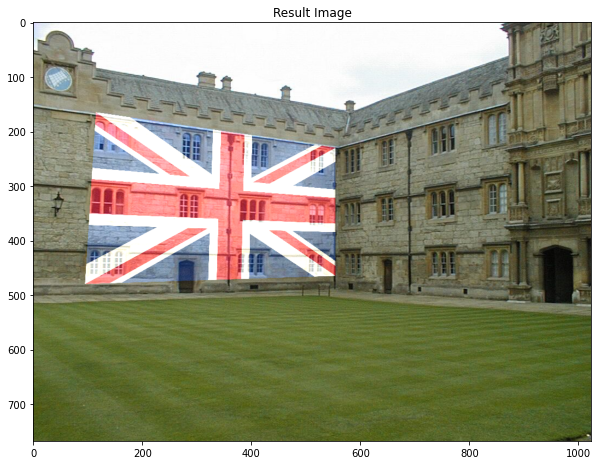
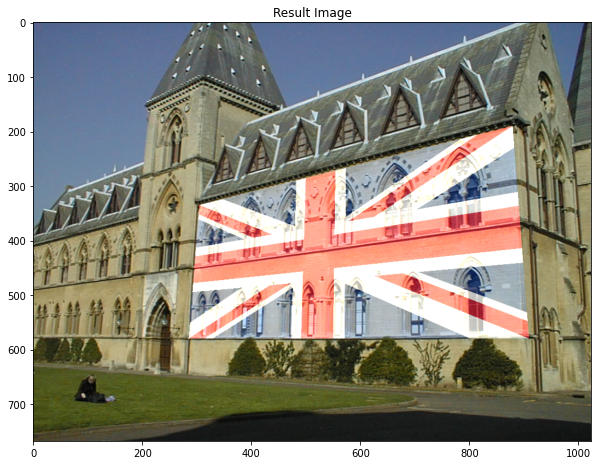
A screenshot of a computer program

Description automatically generated



If we try to fit the circle first, then the circle will fit as previously but the point needs to predict the line will reduce. Specialty the circle and line crossing points. Thus the predicting line won’t be the optimal one.

A screenshot of a computer program

Description automatically generatedQ3

I have specifically chosen the above images so I can strongly show the different orientations that the flag can be projected. This will be a good demo for this assignment.

First I plotted the images with grid on and found the corner coordinates that the flags can be projected. Then using the findHolmography function I found the homography matrix then warp the flag onto the main image using the homography matrix. After that I have blend the warped overlay image with the main image. Which is the output image.

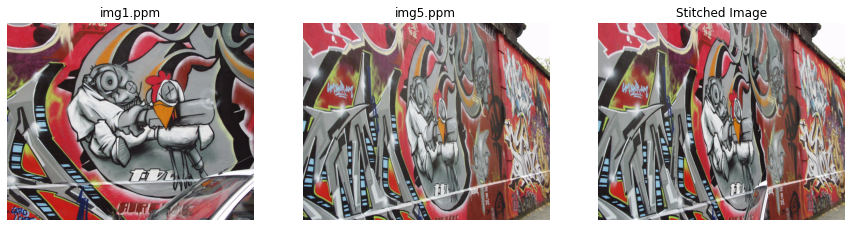
Q4)

Computed Homography

|  |  |  |
| --- | --- | --- |
| 6.35329389e-01 | 5.19838188e-02 | 2.21629196e+02 |
| 2.33088406e-01 | 1.14415052e+00 | -2.52127020e+01 |
| 5.19134819e-04 | -7.50450702e-05 | 1.00000000e+00 |

Provided Homography

|  |  |  |
| --- | --- | --- |
| 6.2544644e-01 | 5.7759174e-02 | 2.2201217e+02 |
| 2.2240536e-01 | 1.1652147e+00 | -2.5605611e+01 |
| 4.9212545e-04 | -3.6542424e-05 | 1.0000000e+00 |





A screen shot of a computer program

Description automatically generated