



Department of Electronic & Telecommunication Engineering,  
University of Moratuwa, Sri Lanka.

## **EN3160 - Image Processing and Machine Vision**

E.M.A.R. Niroshan 210433R

Assignment 02  
Fitting and Alignment

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**GitHub Link**

**Question 1**

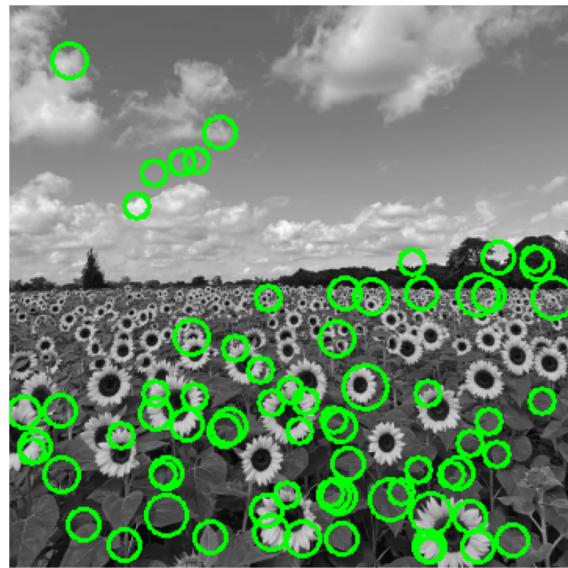


Figure 1: Many sigma values

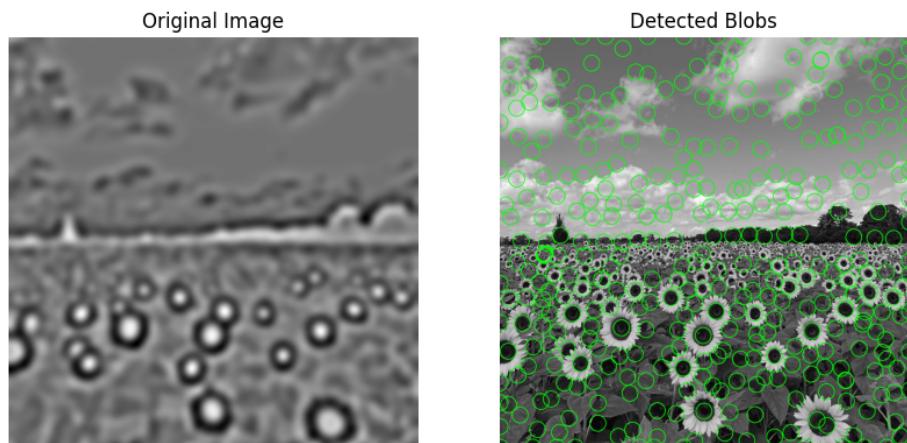


Figure 2: Single Sigma value

Largest circle:  
radius = 14.6472  
(x,y) = (227, 244)

## Question 2

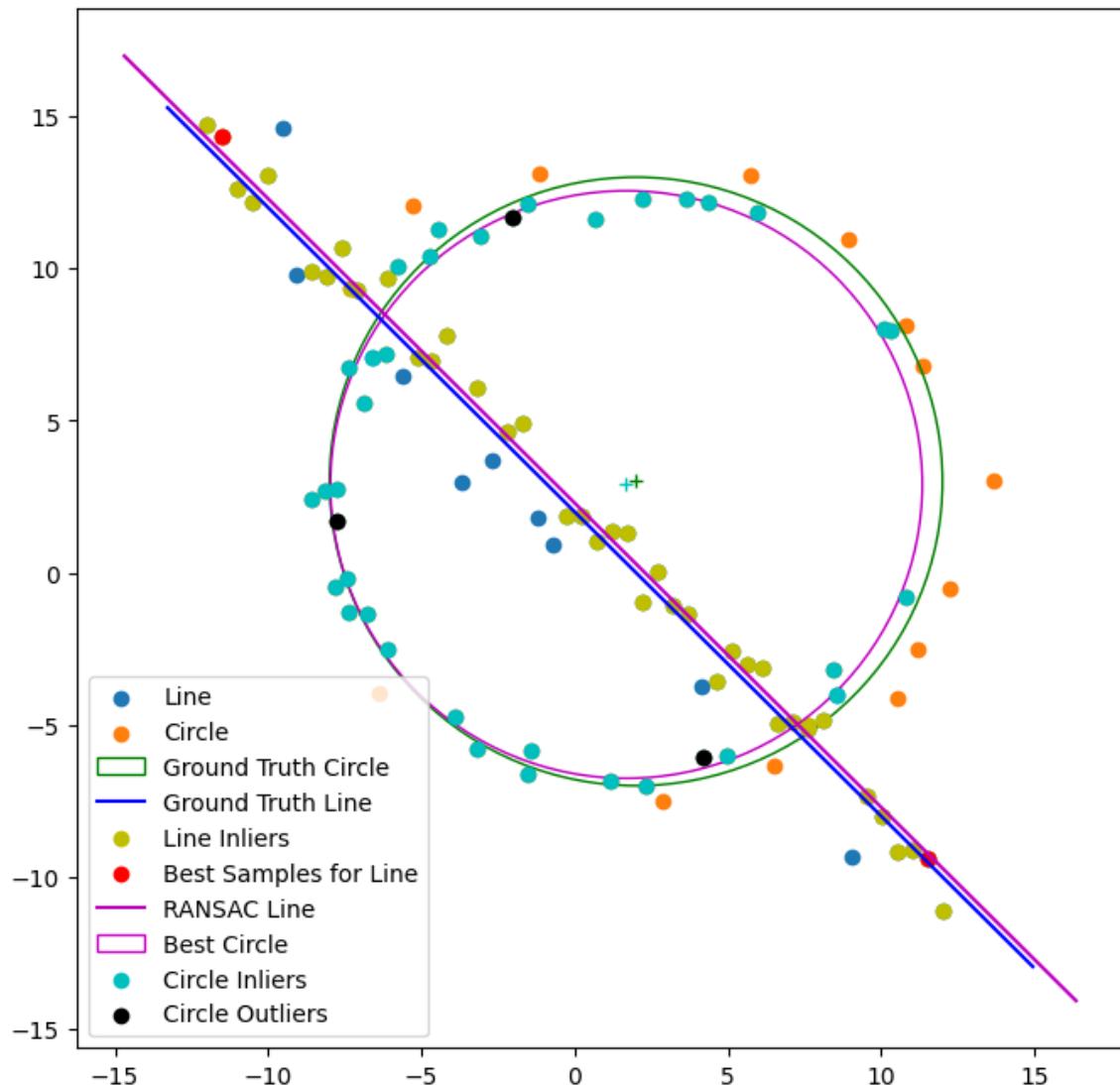
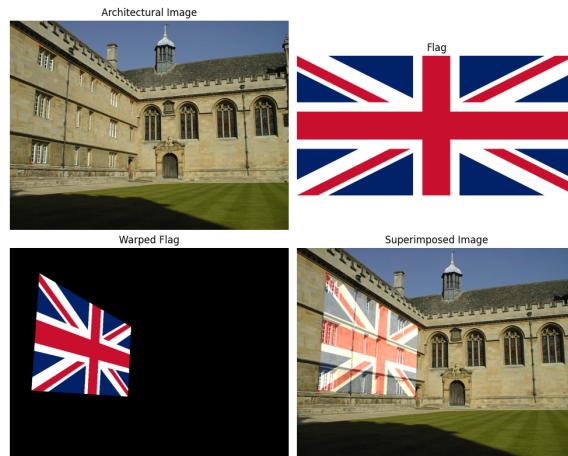


Figure 3: RANSAC

d) Fitting a circle is more complex than fitting a line, as it involves more parameters. If we try to fit a circle first, it might end up looking like a line with an extremely large radius, resulting in an incorrect fit.

### Question 3



```
Homography Matrix:
[[ 3.33548720e-01 -3.22582006e-02  1.08000000e+02]
 [ 2.05067799e-01  4.34320079e-01  9.40000000e+01]
 [ 3.55118846e-04 -2.59476865e-05  1.00000000e+00]]
```

Figure 4: Homography Matrix

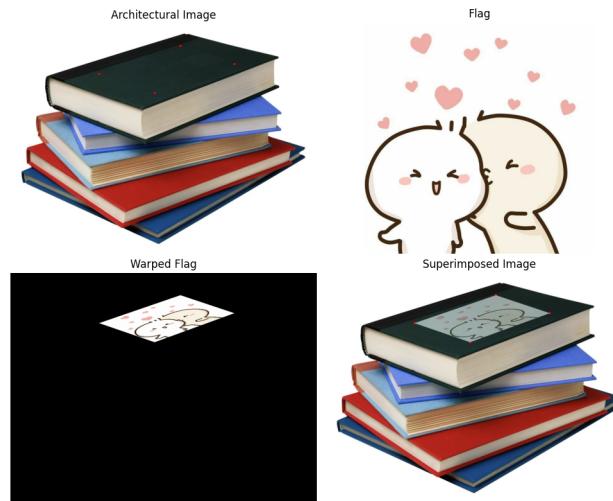
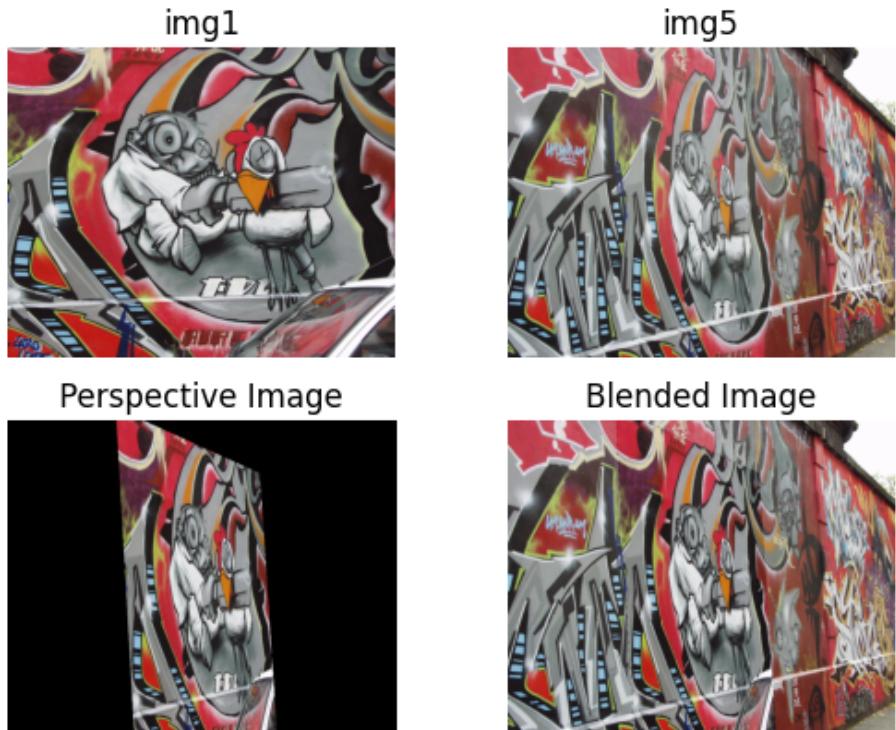


Figure 5: My own choice

I used this method to add this stickers to my book image. Mixing these two types of images creates a visually appealing effect.

#### Question 4



```
[[ -5.54787614e-01 -4.47213590e-01  3.91760720e+02]
 [ -4.17768101e-01 -3.63095823e-01  3.05973435e+02]
 [ -1.40942688e-03 -1.14590702e-03  1.00000000e+00]]
```

Figure 6: Homography Matrix

