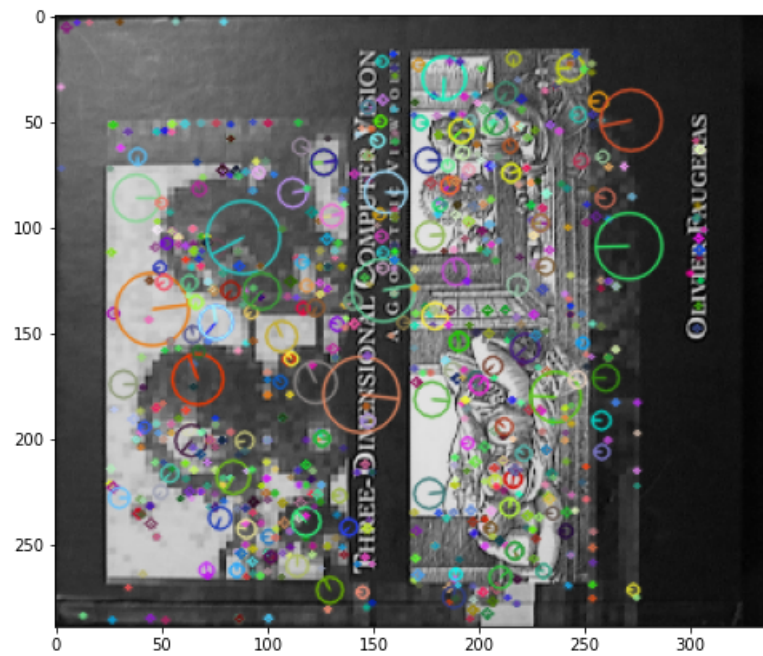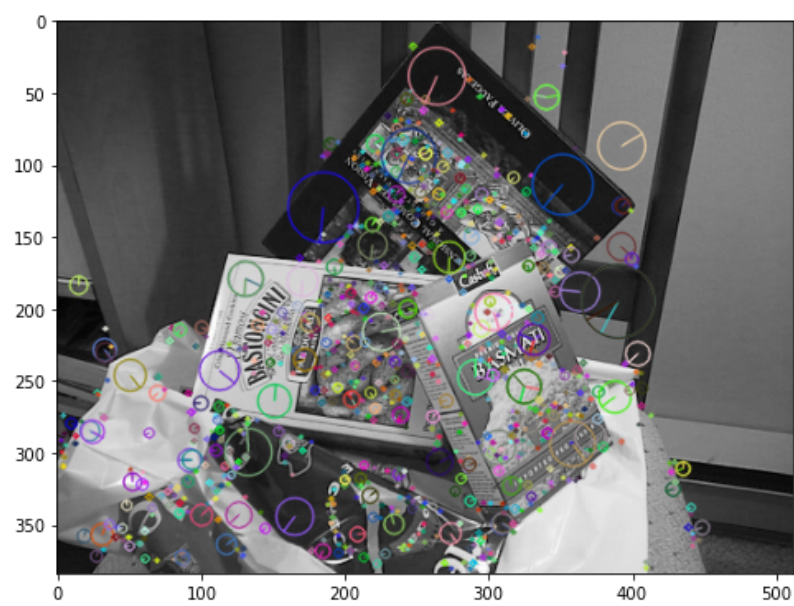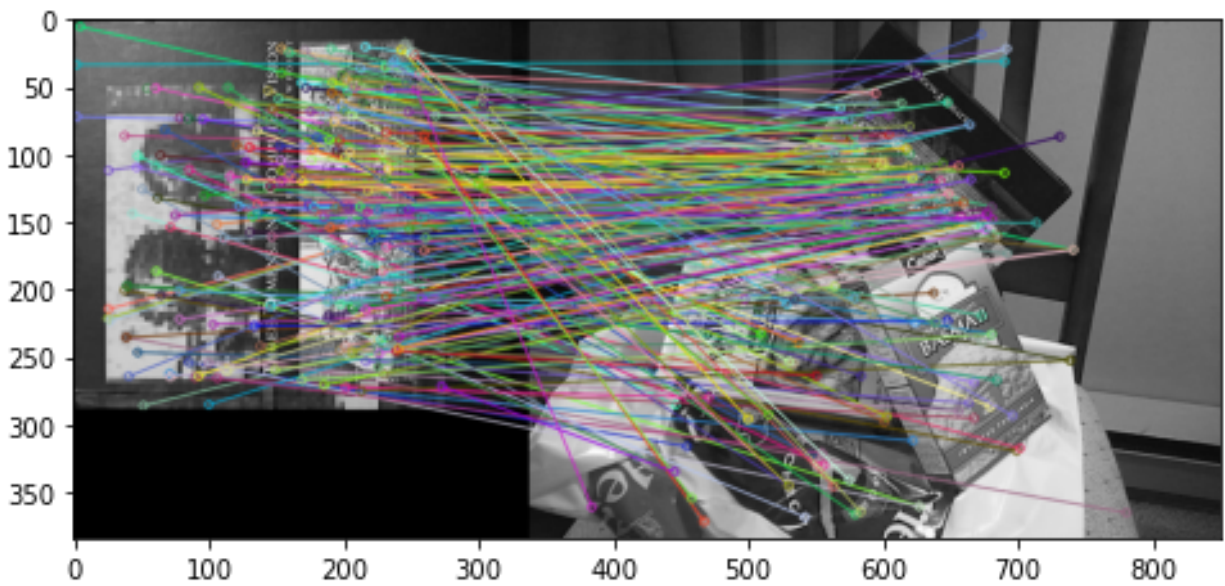## Part 1
SIFT detector on book image

SIFT detector on scene image
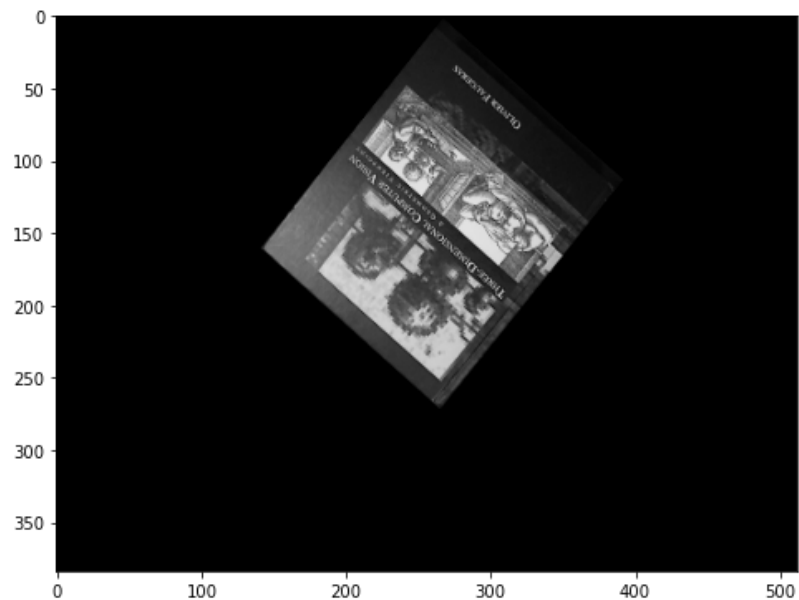
Closest neighbors between book and scene images

H Matrix

```
[[ 0.37337598 0.43044902 141.23236537]
 [ -0.46963082 0.38606294 159.96765095]]
```

Final transformation image

Part 2

Matrix P

```
[[ 1.27000127e-01 2.54000254e-01 3.81000381e-01 5.08000508e-01]
 [-5.08000508e-01 -3.81000381e-01 -2.54000254e-01 -1.27000127e-01]
 [-1.27000127e-01 -2.84587182e-16 -1.27000127e-01 2.01339041e-16]]
```

Distance between reprojection of world points and image points

```
[[[4.84760191e+01 6.38235130e+00 2.12940070e+01]
 [4.28038161e+01 1.36010250e-14 1.57103228e+01]
 [2.72310022e+01 1.57103228e+01 0.00000000e+00]]
```

C matrix (as found by SVD)

```
[ 1. -1. -1.]
```

C matrix (as found by RQ decomposition)
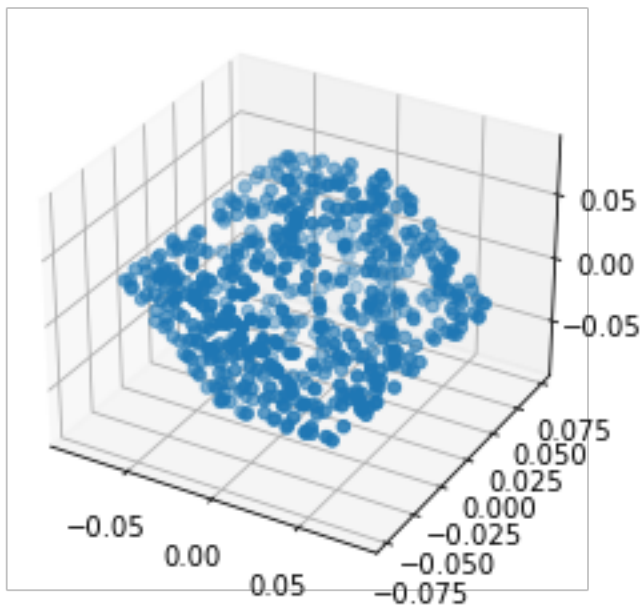
```
[ 1. -1. -1.]
```

Part 3

Translation vector for first camera

```
[2.36847579e-17 8.28966525e-17]
```

First camera location

```
[[-7.50914219 3.30837904 -3.71763726]
 [-4.53754376 -1.57773527 7.74574759]]
```

First 10 3d world points

```
[[ 0.00577163 0.06460628 -0.02497615]
 [ 0.0005761 0.06885363 -0.03458151]
 [-0.04293585 0.06330479 0.02861711]
 [ 0.04745038 0.04904207 -0.01257547]
 [-0.04210186 0.06789239 0.01175164]
 [ 0.05961964 0.0460518 -0.01438374]
 [ 0.00909167 0.06002049 -0.01229997]
 [ 0.01039489 0.04602065 0.03529275]
 [-0.02589081 0.05702972 0.03337375]
 [ 0.01745598 0.04054264 0.04731859]]
```