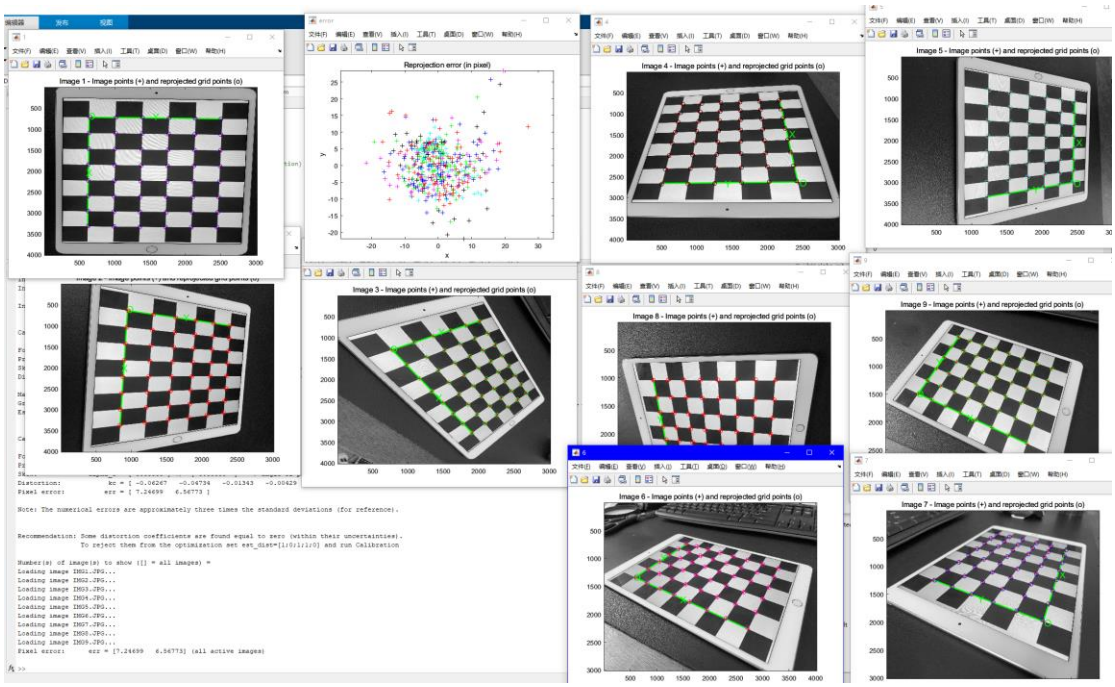
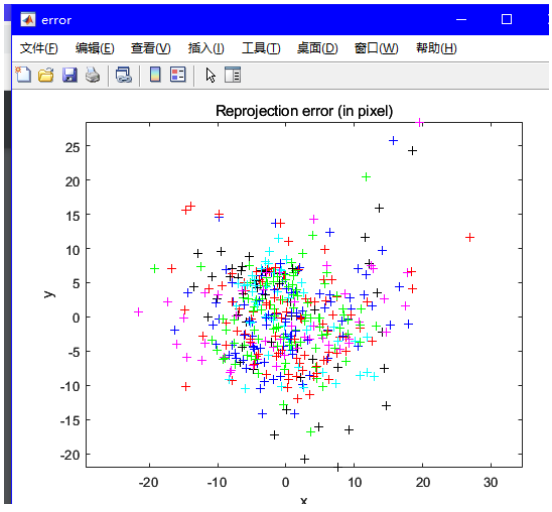


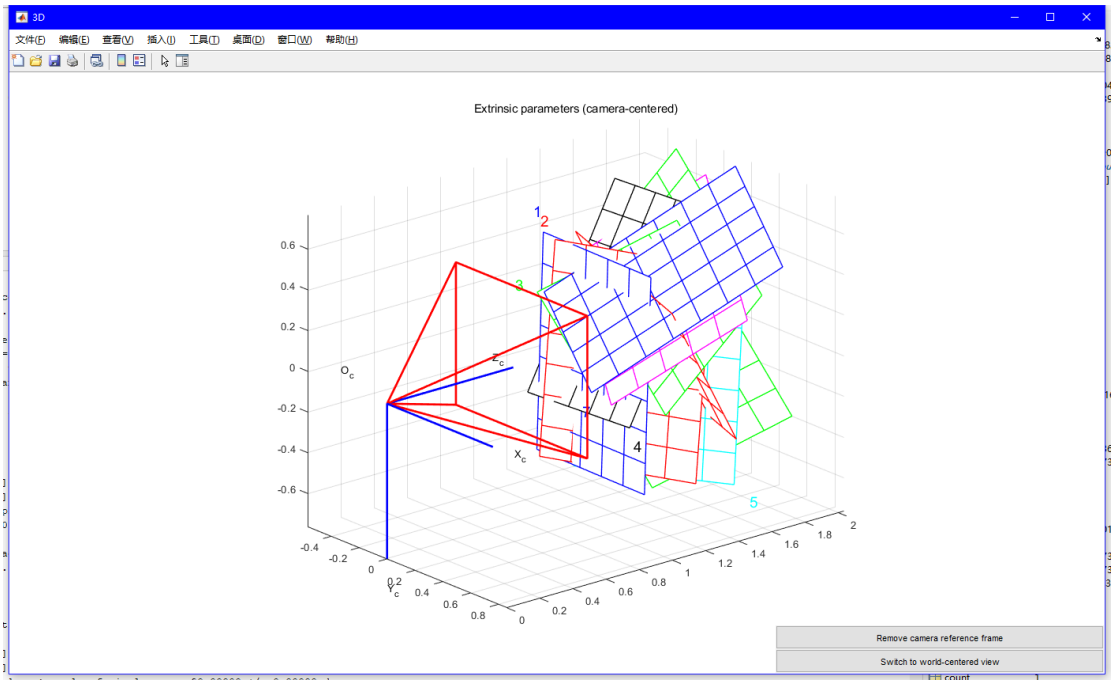

```
Aspect ratio optimized (est_aspect_ratio = 1) -> both components of fc are estimated (DEFAULT).
Principal point optimized (center_optim=1) - (DEFAULT). To reject principal point, set center_optim=0
Skew not optimized (est_alpha=0) - (DEFAULT)
Distortion not fully estimated (defined by the variable est_dist):
    Sixth order distortion not estimated (est_dist(5)=0) - (DEFAULT) .
Initialization of the principal point at the center of the image.
Initialization of the intrinsic parameters using the vanishing points of planar patterns.

Initialization of the intrinsic parameters - Number of images: 9


Calibration parameters after initialization:

Focal Length:          fc = [ 2707.39833   2707.39833 ]
Principal point:       cc = [ 1511.50000   2015.50000 ]
Skew:             alpha_c = [ 0.00000 ]   => angle of pixel = 90.00000 degrees
Distortion:            kc = [ 0.00000   0.00000   0.00000   0.00000   0.00000 ]

Main calibration optimization procedure - Number of images: 9
Gradient descent iterations: 1...2...3...4...5...6...7...8...9...10...11...12...13...14...15...16...17...18...19...20...21...22...23...24...25...26...27...28...29...30...done
Estimation of uncertainties...done


Calibration results after optimization (with uncertainties):

Focal Length:          fc = [ 3247.37240   3291.94969 ] +/- [ 54.03575   56.66971 ]
Principal point:       cc = [ 1758.97744   1733.24492 ] +/- [ 61.99347   67.83432 ]
Skew:             alpha_c = [ 0.00000 ] +/- [ 0.00000 ]   => angle of pixel axes = 90.00000 +/- 0.00000 degrees
Distortion:            kc = [ -0.06267   -0.04734   -0.01343   -0.00429   0.00000 ] +/- [ 0.04856   0.12754   0.00562   0.00493   0.00000 ]
Pixel error:          err = [ 7.24699   6.56773 ]

Note: The numerical errors are approximately three times the standard deviations (for reference).


Recommendation: Some distortion coefficients are found equal to zero (within their uncertainties).
               To reject them from the optimization set est_dist=[1;0;1;1;0] and run Calibration
```

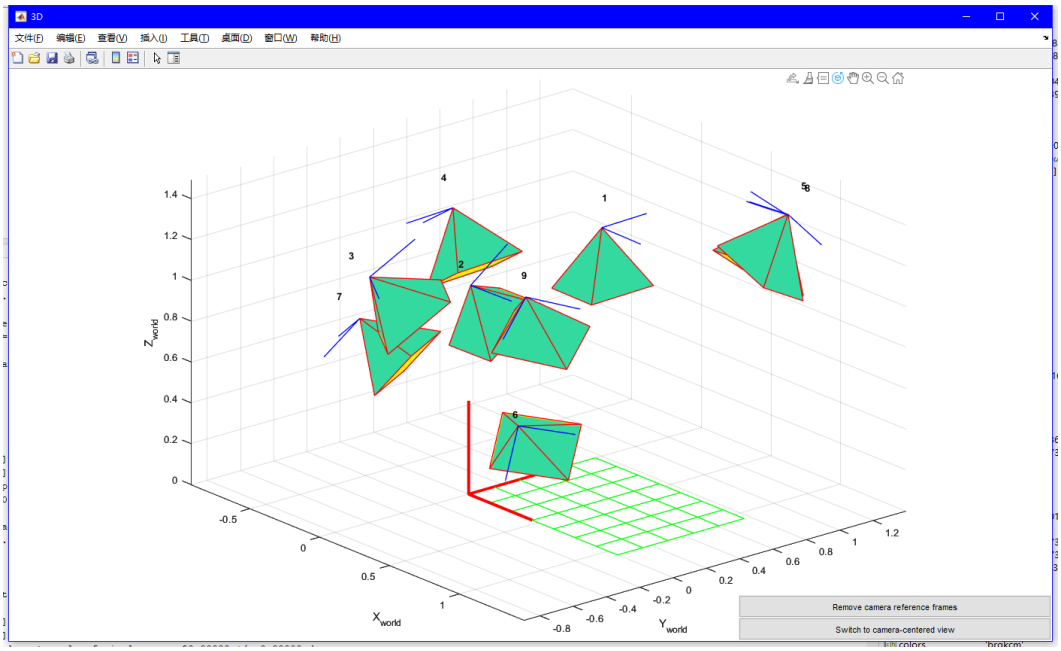


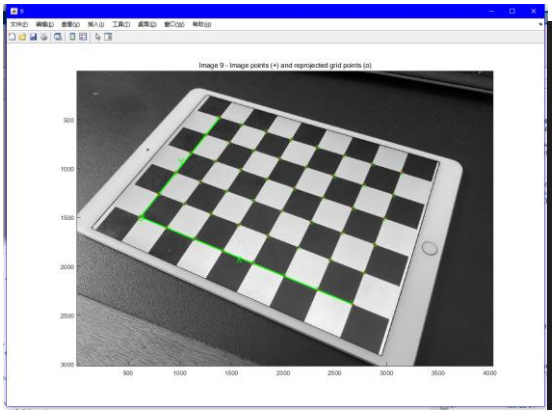
Pixel error: err = [7.24699 6.56773] (all active images)

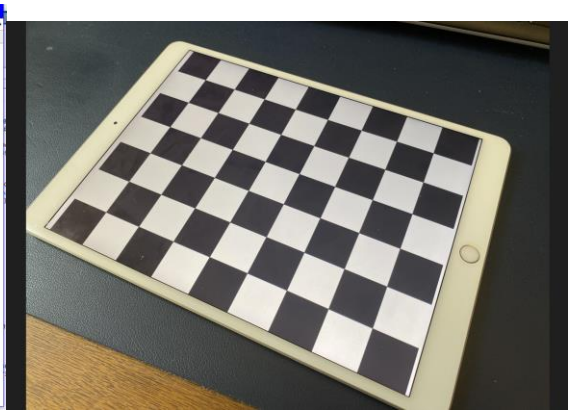
After changing from 4000 x 3000 to 1600 x 729, the reproj error came to be a reasonable value of

Pixel error: err = [0.49564 0.75135] (all active images)



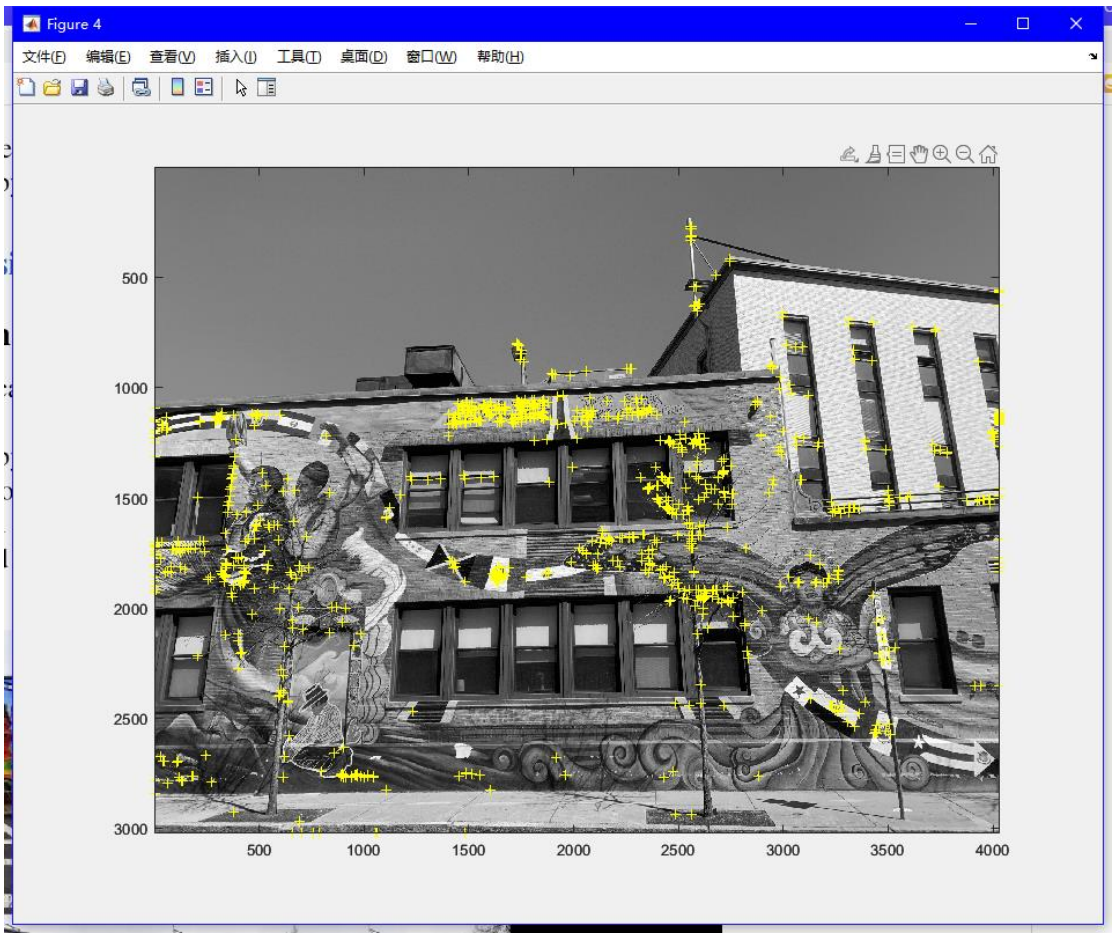


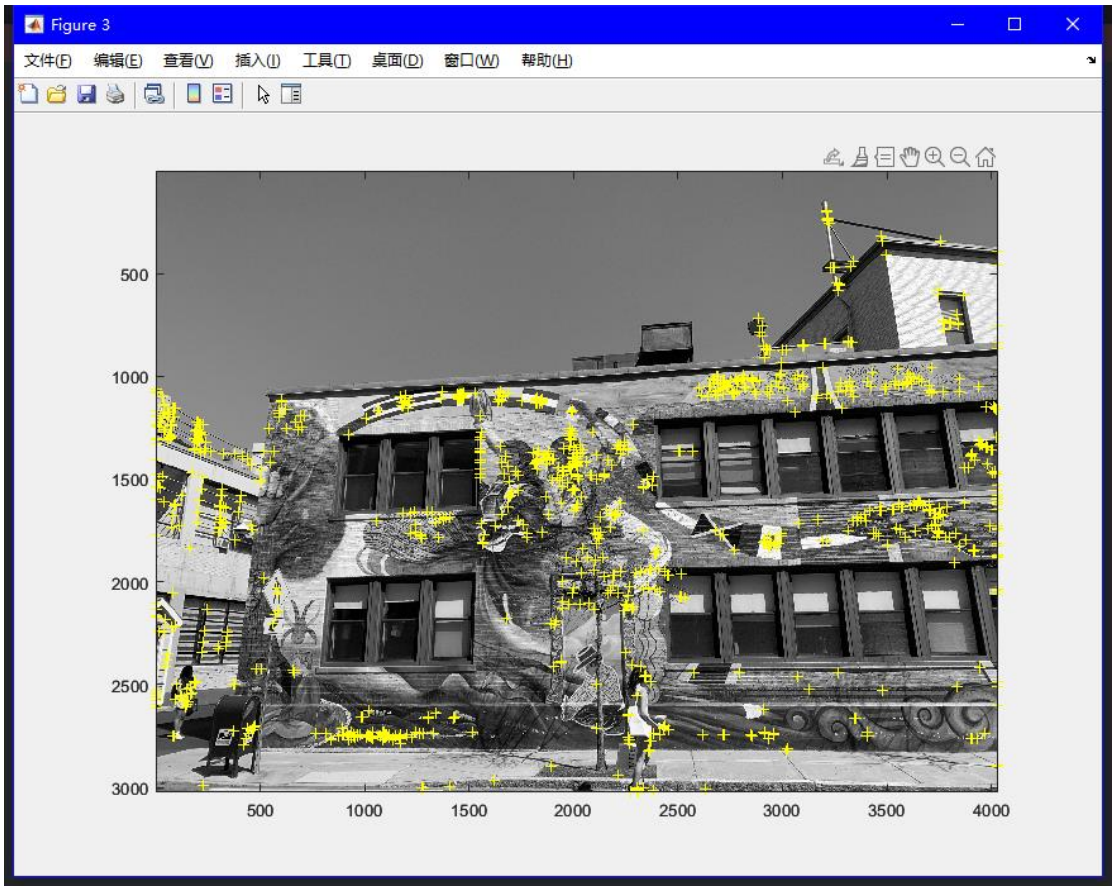




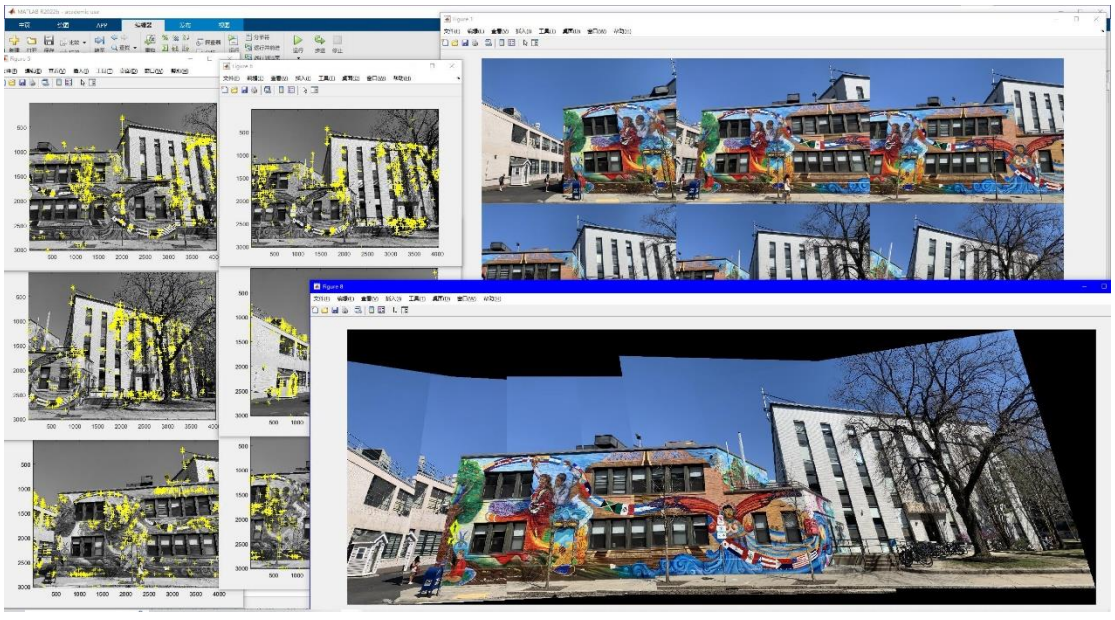
After Calibration Before Calibration

The image of LSC and the final mosaic is in the LSC folder
Some sample image is as follows:





And the stitched image is as follows:

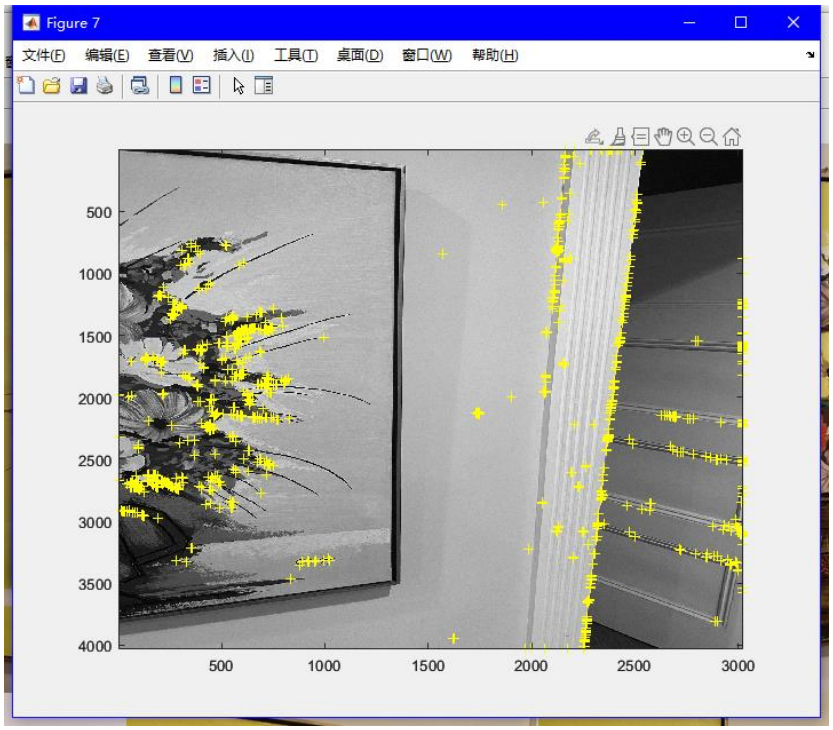


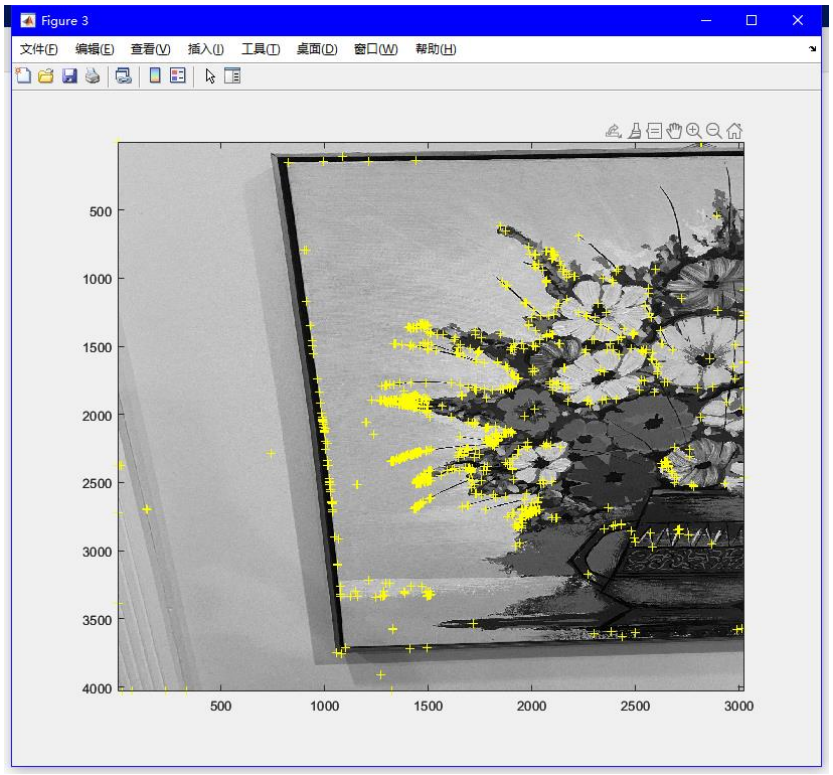
In the process of using the feature-based panoramic image stitching, I set the detector with 1000 features, and with a 2 by 2 tile that distributes these feature points across the image

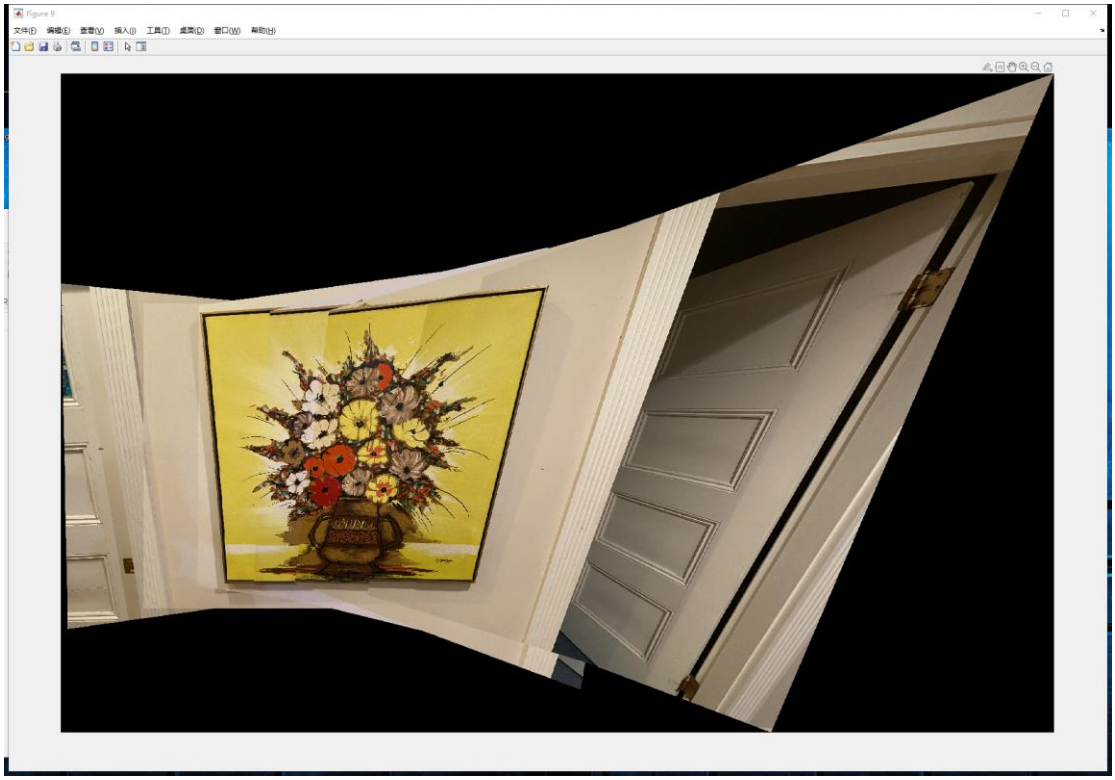
The corner detection is working properly but has some drawbacks as can be seen on the stitched image, there are several places where the pattern slightly

misaligns. This is mainly due to that harris struggles to detect 3D objects and structures through 2D detectors.

50% Overlap
I take some pictures of a painting in my house, the set up is the same as the previous one (1000 [2,2] and disp)







I couldn’t finish the rest in time, I will try to make them up sometime later