

IE 6500 Human Performance Lab Report

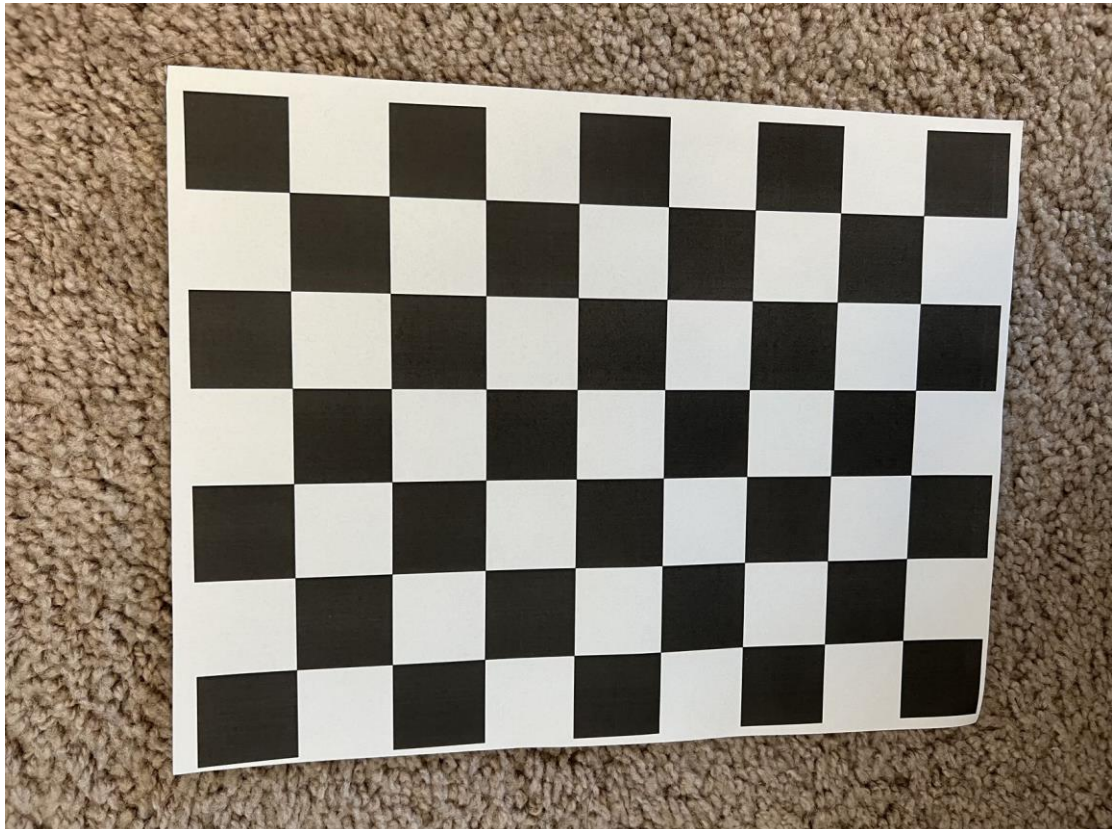
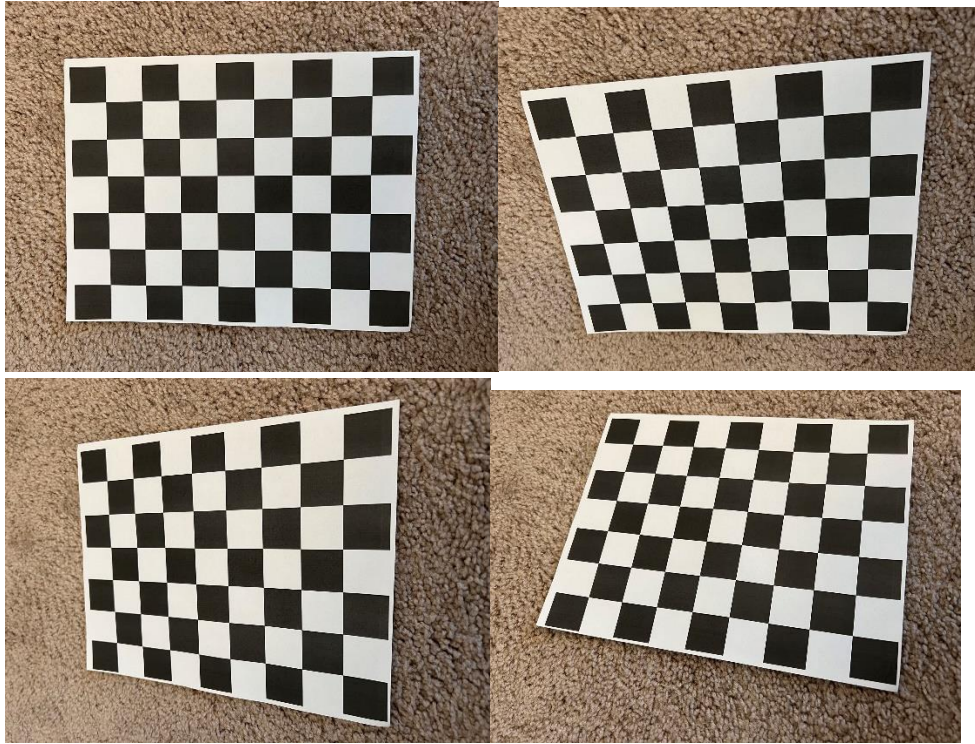
Lab 5

Student Name: Dayuan Wei

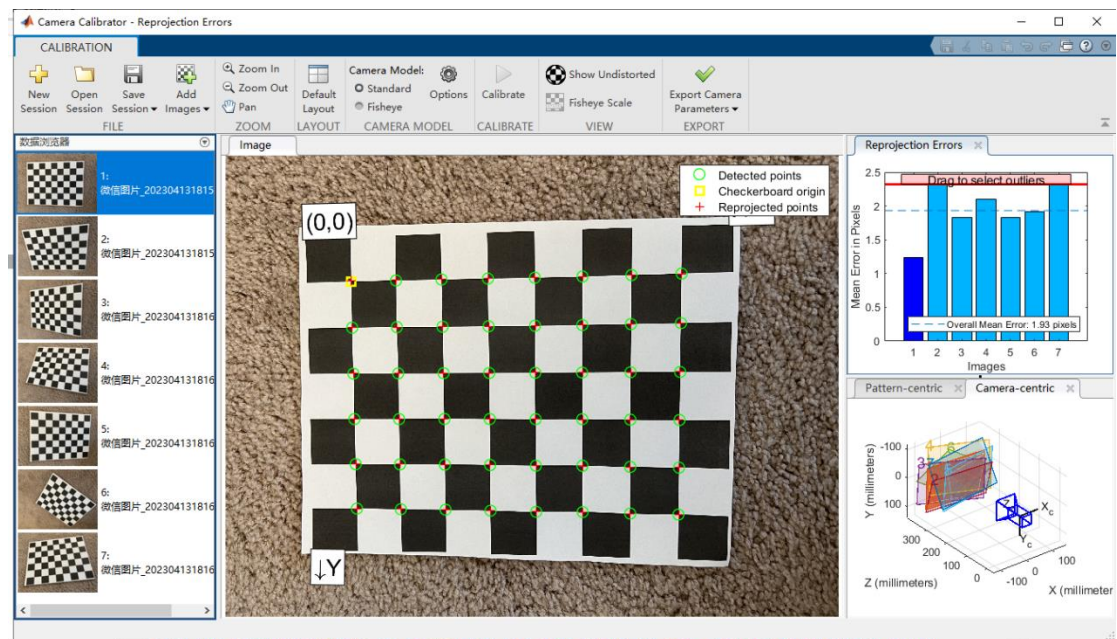
Date Submitted: 04/11/23

1.Criterion

Camera images used for calibration.

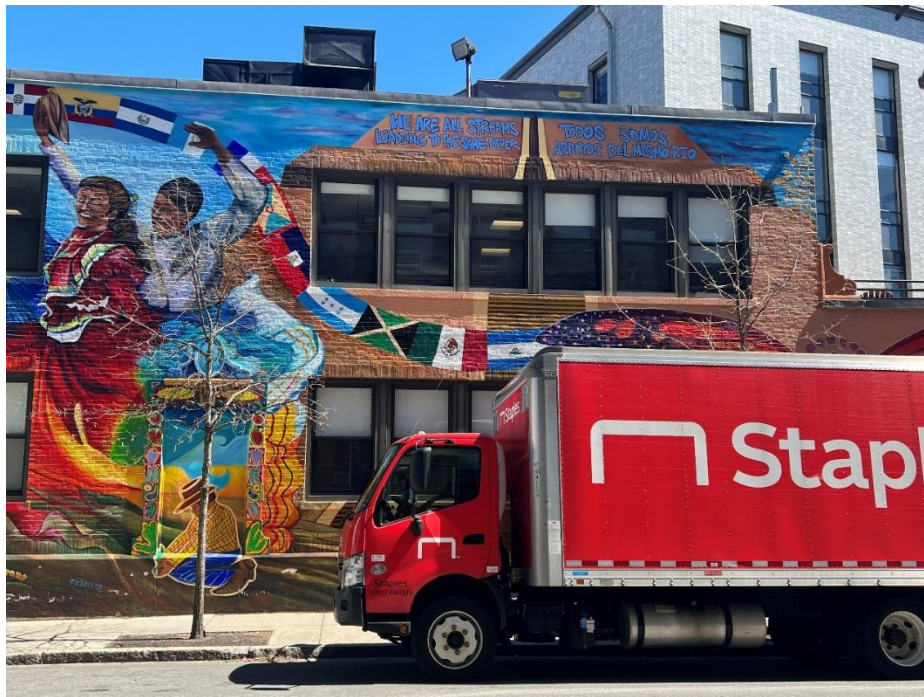


Reprojection pixel error and calibration parameter



ImageSize	[3024,4032]
RadialDistortion	[0.1104,-0.2862]
TangentialDistortion	[0,0]
WorldPoints	48×2 double
WorldUnits	'millimeters'
EstimateSkew	0
NumRadialDistortionCoeffi...	2
EstimateTangentialDistortion	0
ReprojectionErrors	48×2×7 double
DetectedKeypoints	48×7 logical
RotationVectors	7×3 double
K	[3.0762e+03,0,2.0336e+03;0,...
NumPatterns	7
Intrinsics	1×1 cameraIntrinsics
PatternExtrinsics	7×1 rigidtfom3d
FocalLength	[3.0762e+03,3.0686e+03]
PrincipalPoint	[2.0336e+03,1.5369e+03]
Skew	0
MeanReprojectionError	1.9325
ReprojectedPoints	48×2×7 double

Before calibration

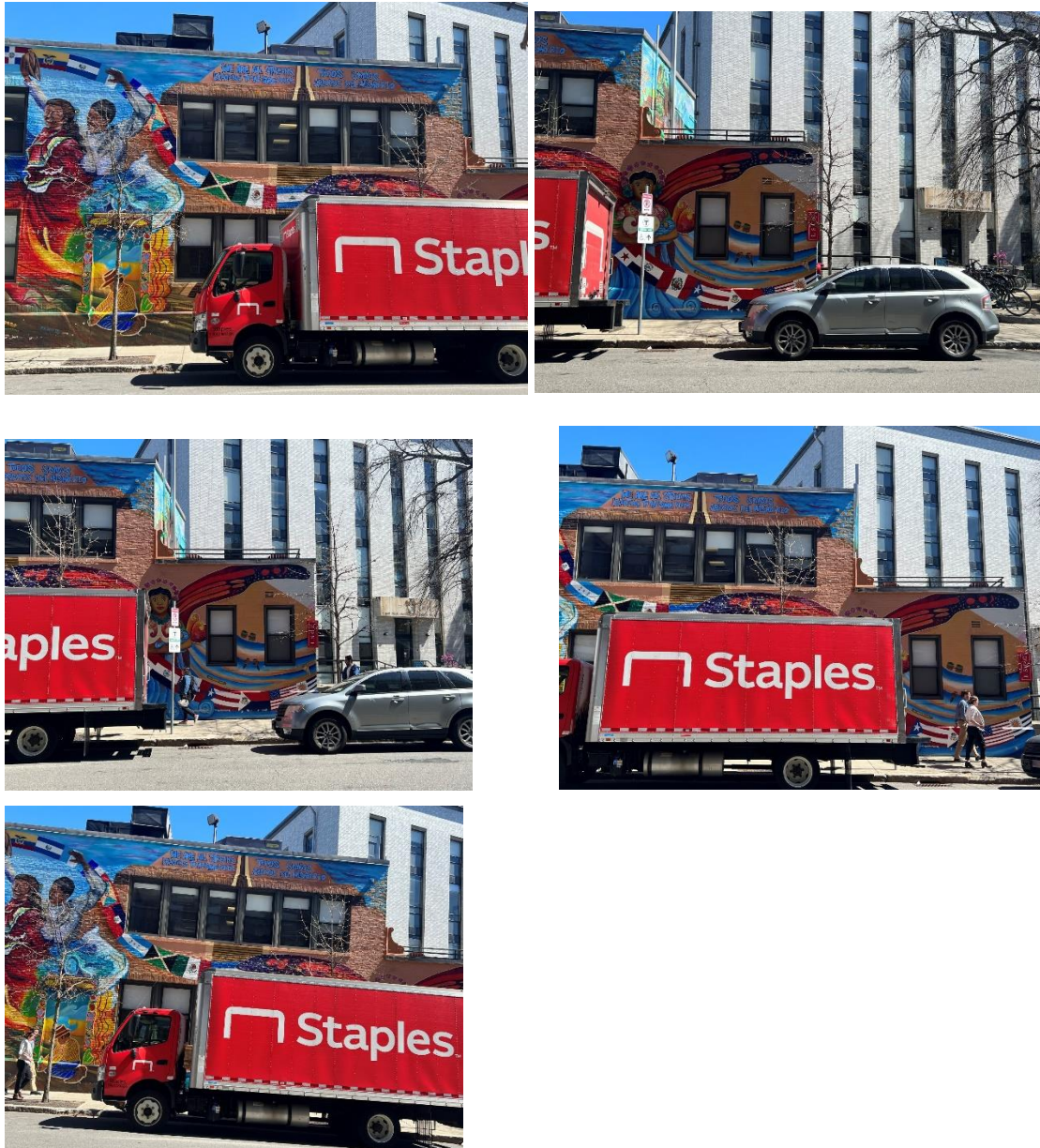


After calibration

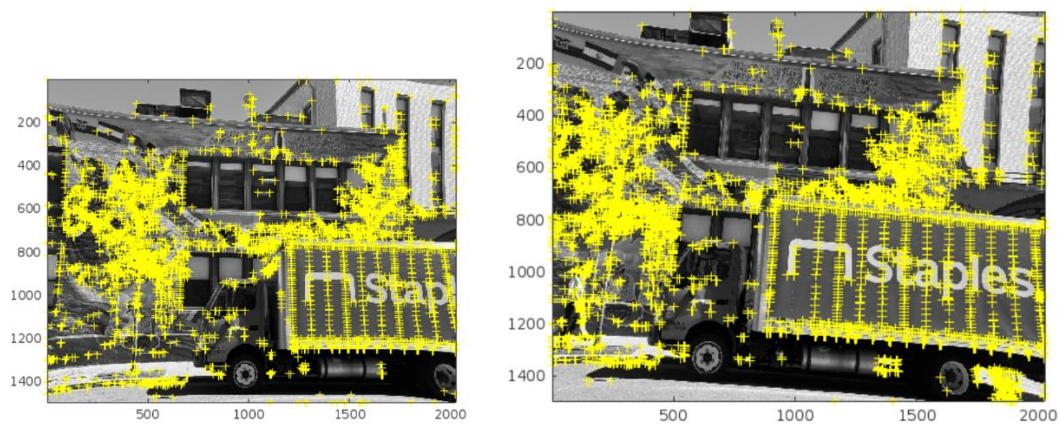


2.LSC mosaic

Raw LSC image set



Distribution of Harris corner across LSU image set





Final LSC image

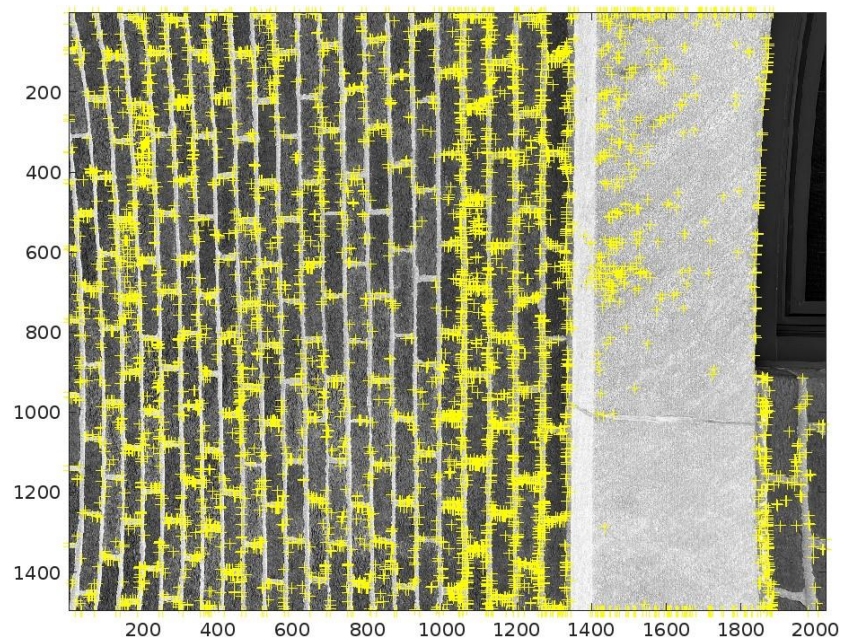
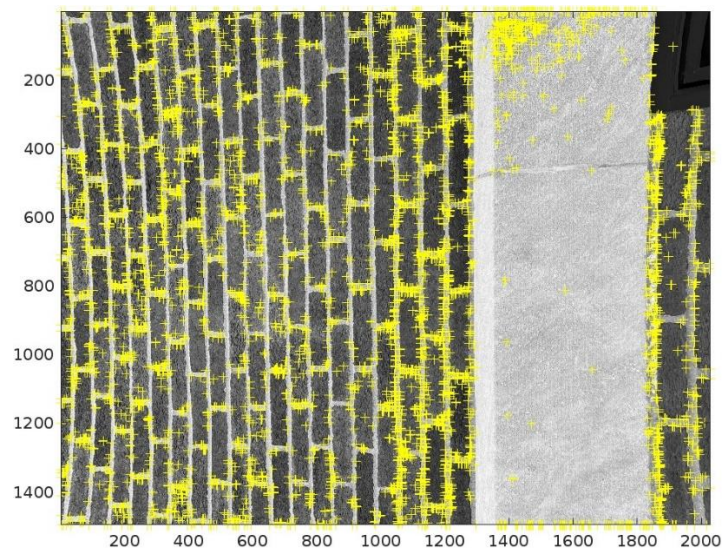


Discussions

Make 2000 points maximum for the Harris monitor points.

3.Cinder block wall mosaic

Initial images with Harris corners



Final cinder block image

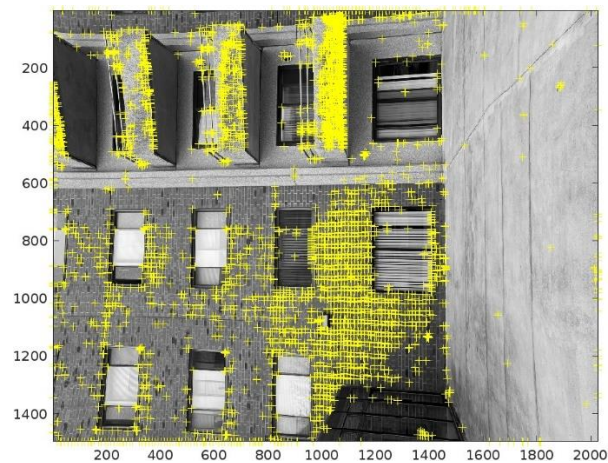


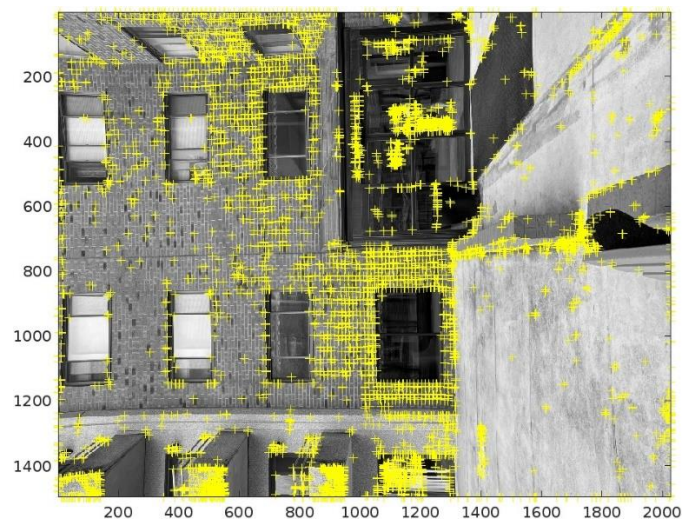
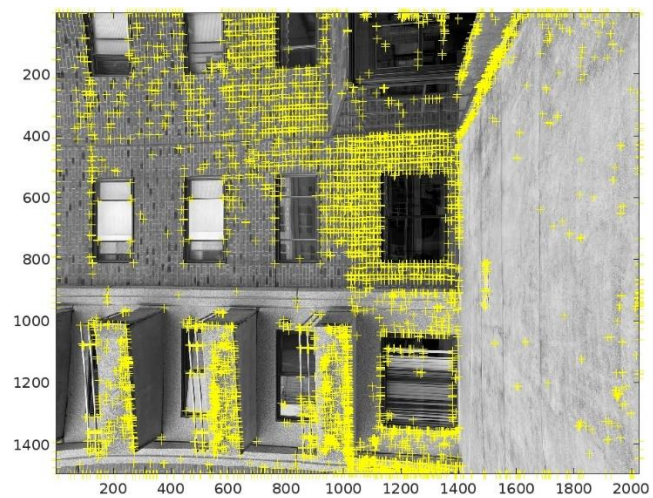
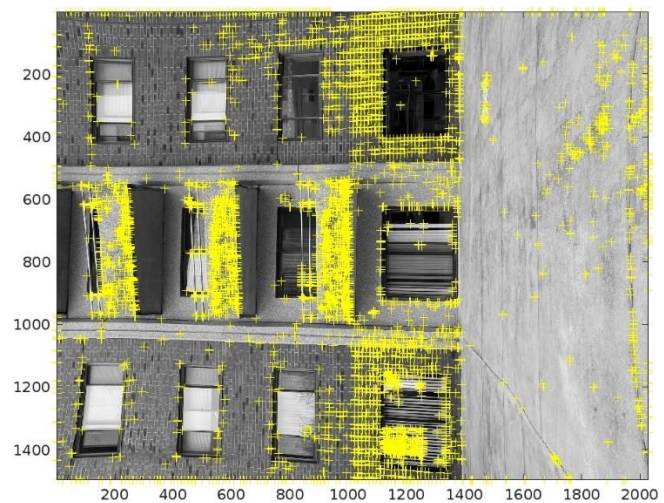
Explanation of cinder

I think the performance is kind of worse than the LSC building. The brick wall has this special sign other than that, they all are the same, so the code is hard to match the sign together and put it into a big picture. But the white bricks and pipe one the right may helped my program to identify better.

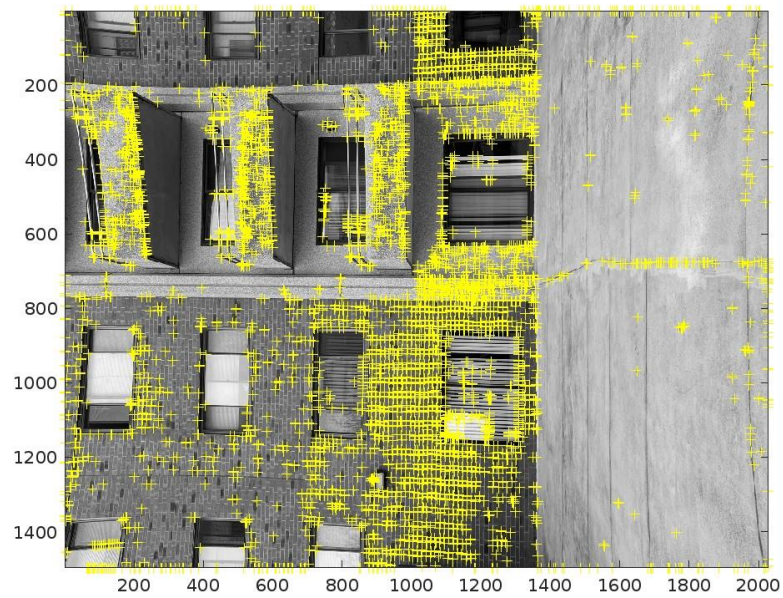
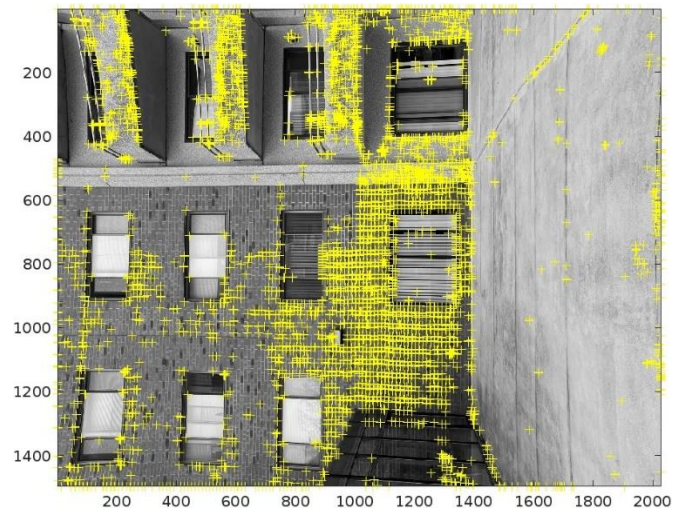
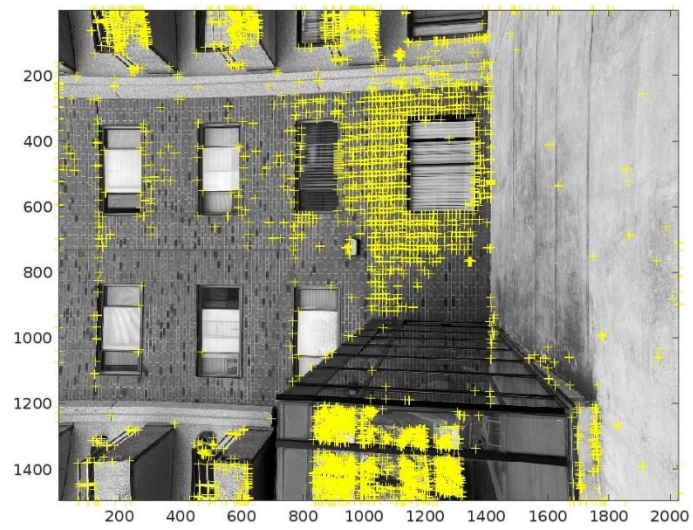
4.Third mosaic

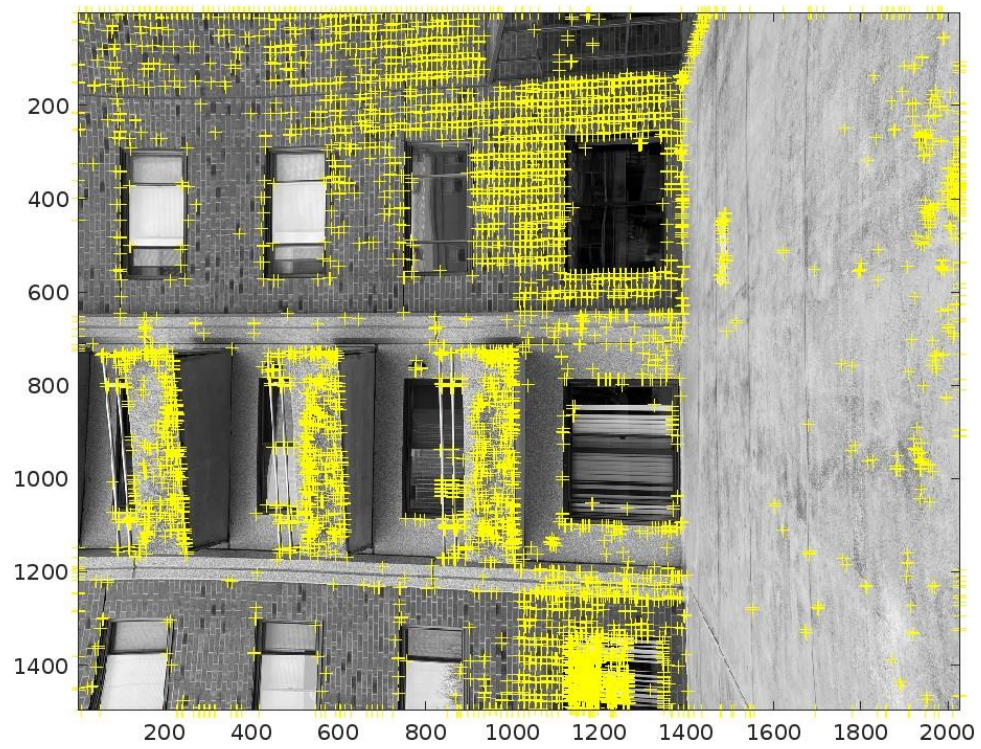
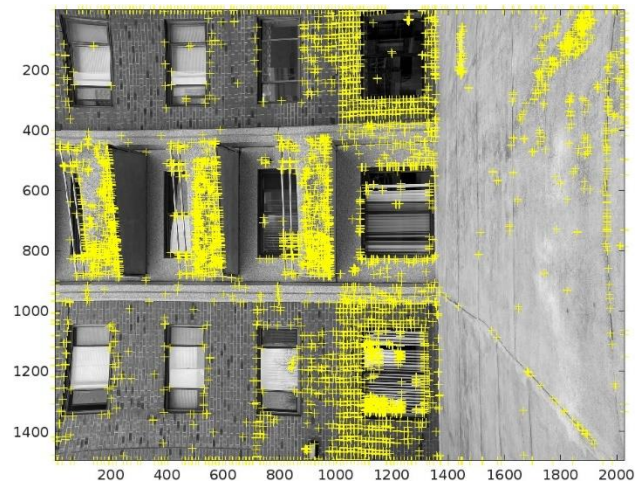
Initial images with Harrison corner 15% overlap





Initial images with harris corner 50% overlap





Final mosaic with 15%



Final mosaic 50%



Discussion of performance

There are more repeated things in 50% than 15%, so the code can generate more matching points to help match the pictures together. If there is something wrong with the picture, the code will need more time to process it.

I got a lot of bad pictures result when doing 15 percent overlapping at first, And I decreased the confidence and add a little more trials in order to correct it. Below is bad result I got before. I think that's because Harrison corner didn't correspond to each other. It affected by a lot environment elements include light and shadow etc.

