

CIS 581

Project 3A: Image Stitching

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There are two kinds of feature descriptors from which features can be detected:

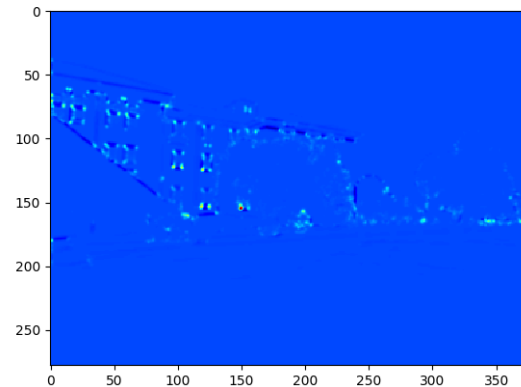
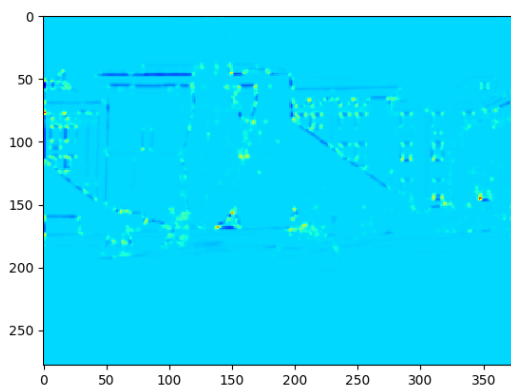
1. **Our own feature descriptors** Here we have created a oriented patch of size 40x40 and sampled 64 pixels at interval of 5 pixels as mentioned in the homework PDF. The orientation depends upon the gradient direction of that pixel (from smoothed orientation map).
2. **SIFT features:** We have used OpenCV SIFT features after building OpenCV (3.4.3) and OpenCV_contrib repositories using cmake.

Note: Result after RANSAC is given as: **Red Dots:** Inliers, **Blue Dots:** Outliers

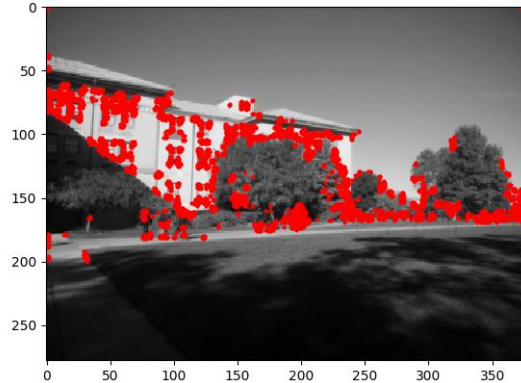
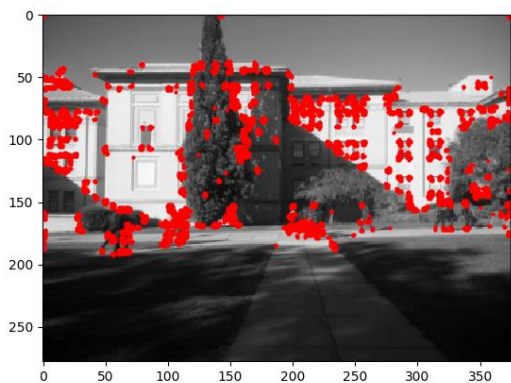
Following are the results obtained using **our own feature descriptors**:

DATASET 1

Corner Harris Response Images:



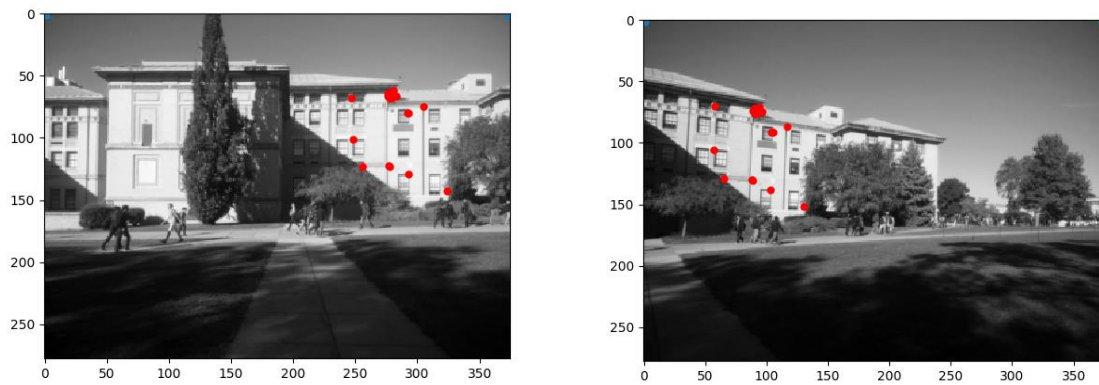
Corners Detected:



Features Matched:



Result after RANSAC:

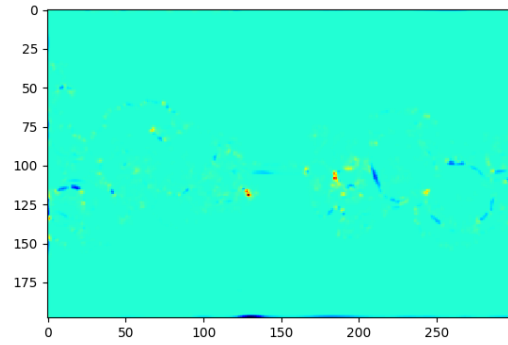
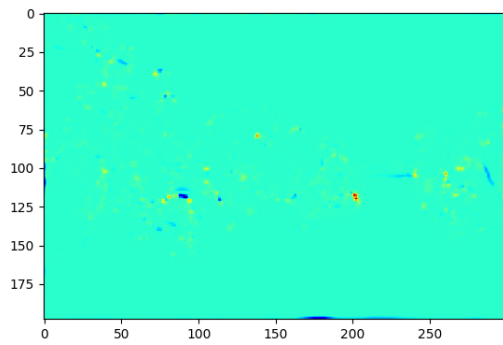


Final Result:

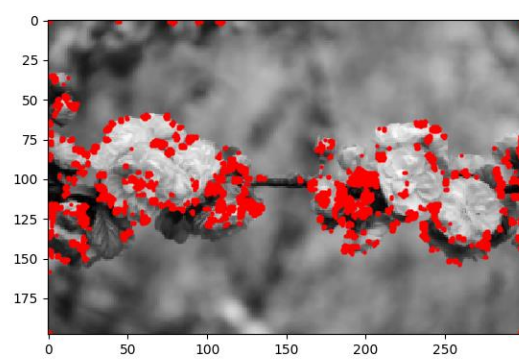
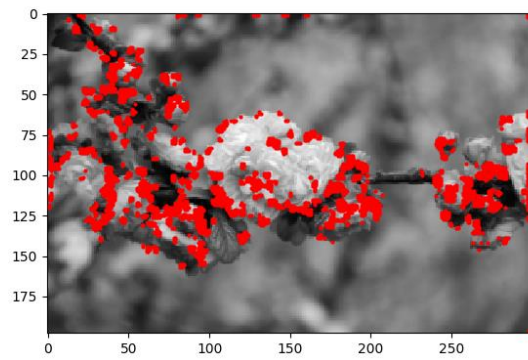


DATASET 2:

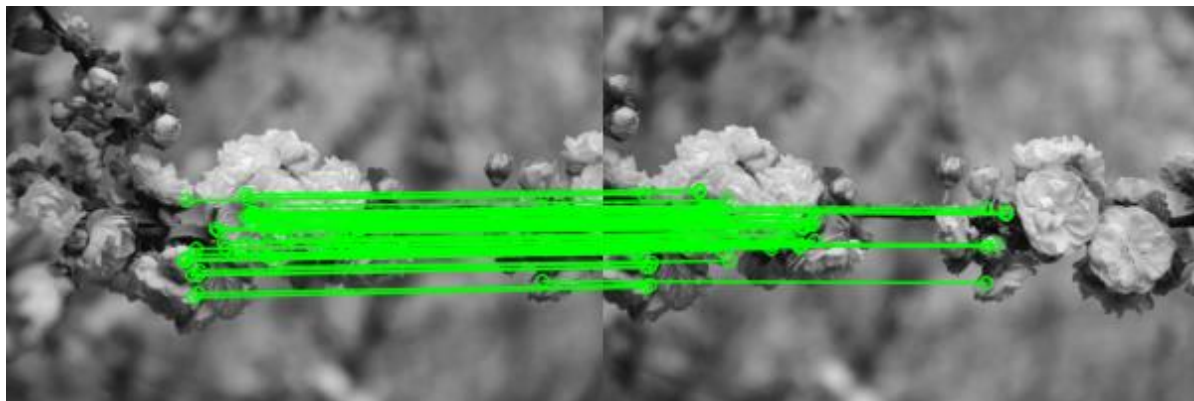
Corner Harris Response Map:



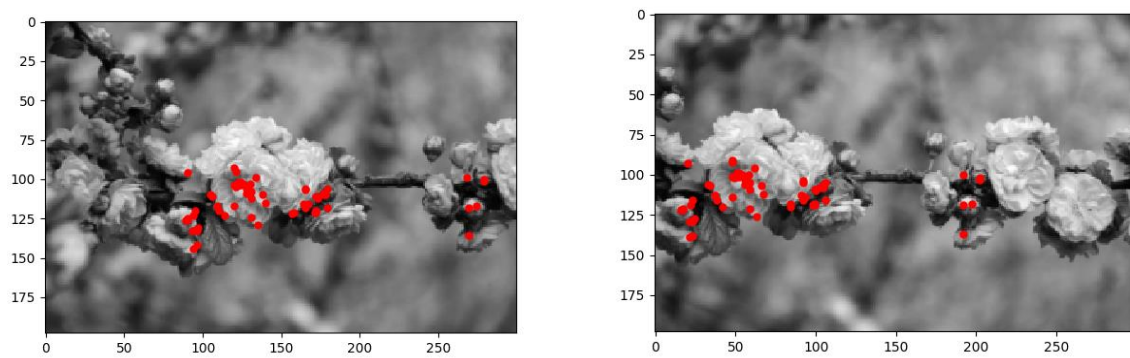
Corners detected:



Features Matched:



Result after RANSAC:

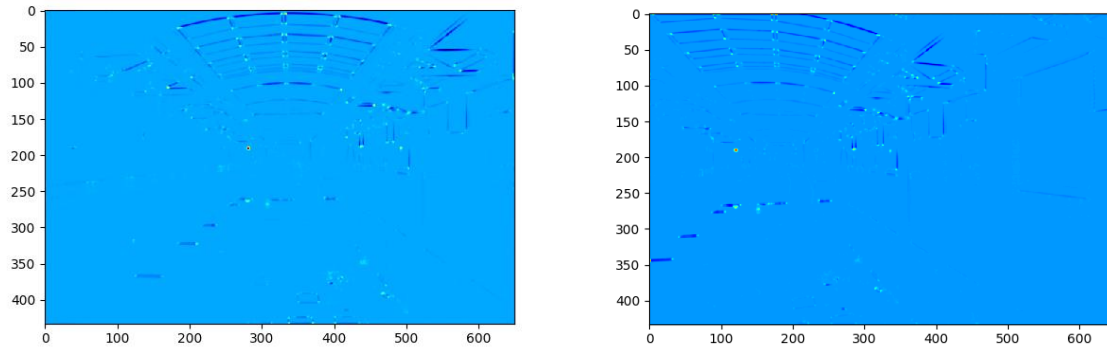


Final Result:

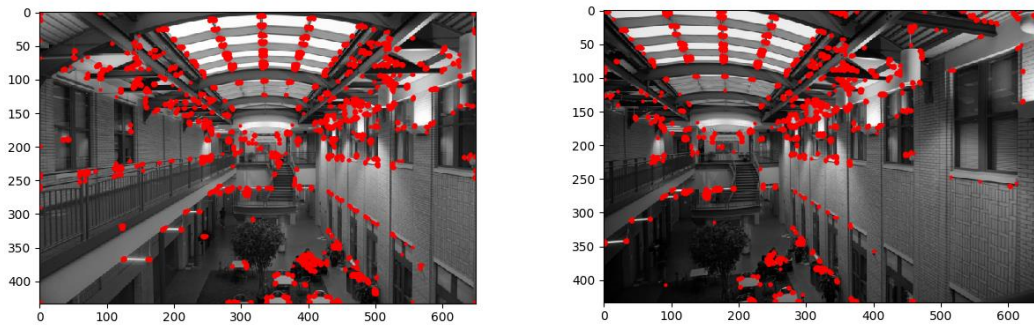


DATASET 3:

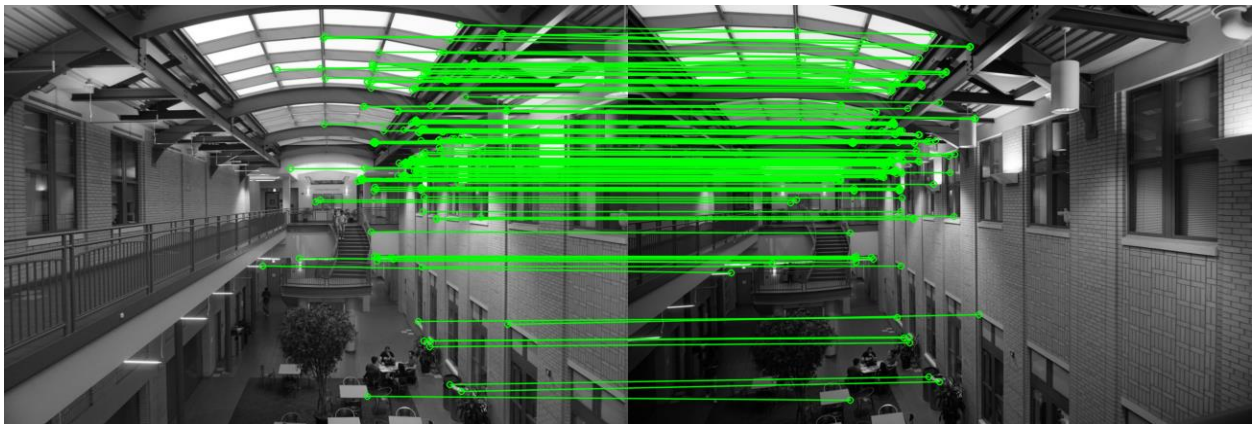
Corner Harris Response Map:



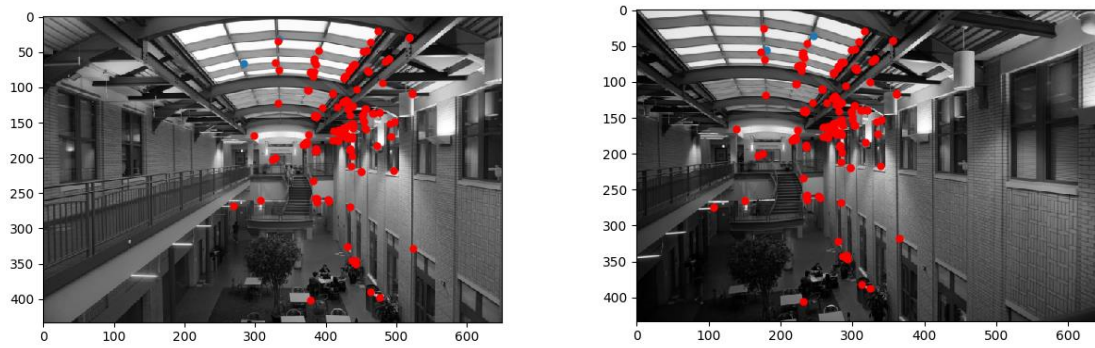
Corners Detected:



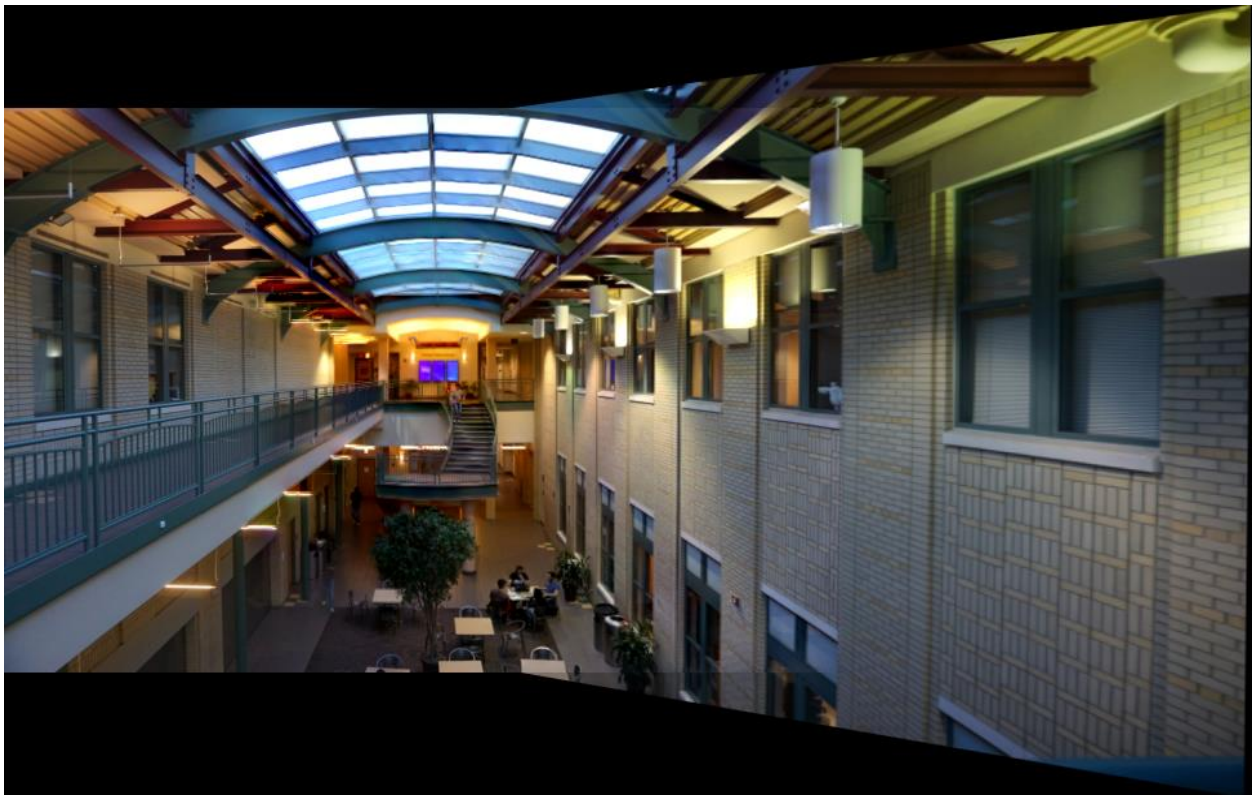
Feature Matched:



Result after RANSAC:

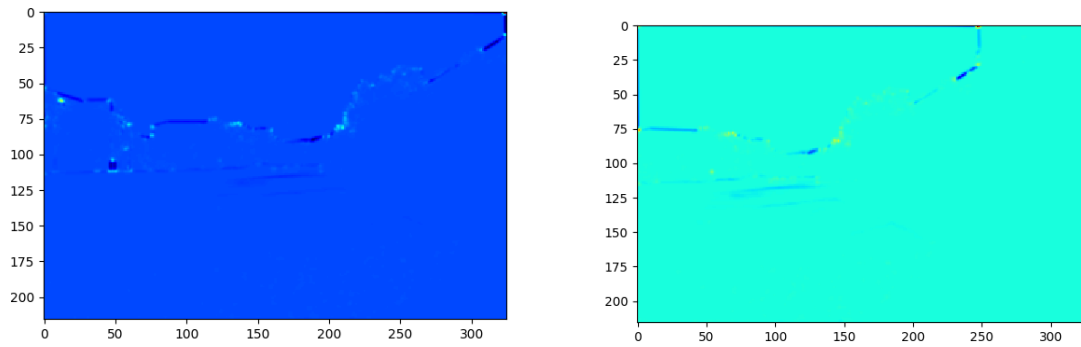


Final Result:

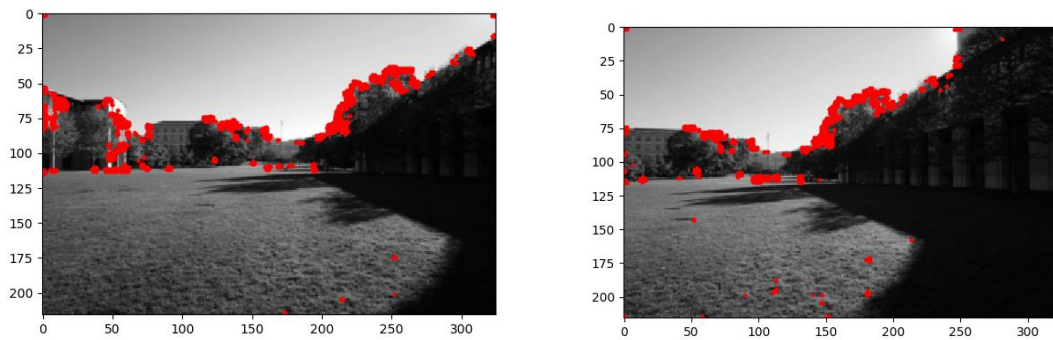


DATASET 4:

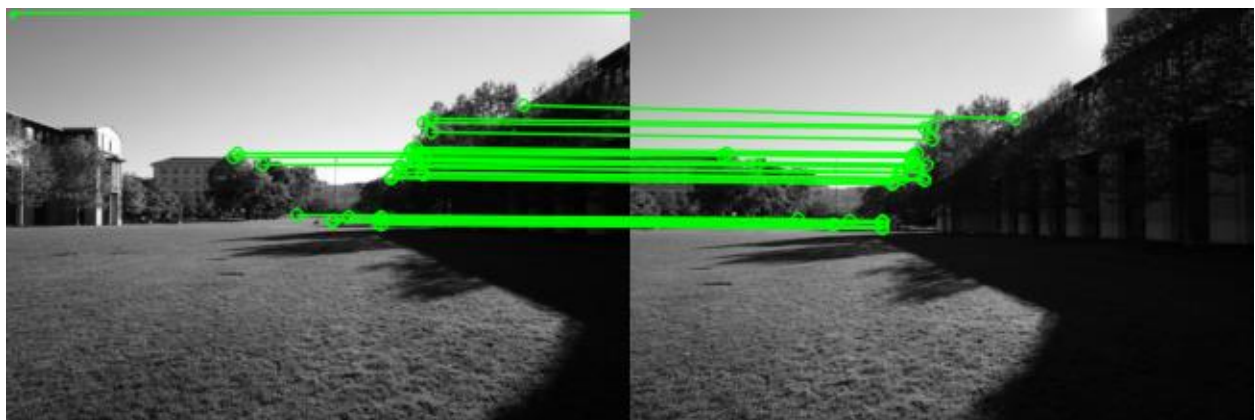
Corner Harris Response Map:



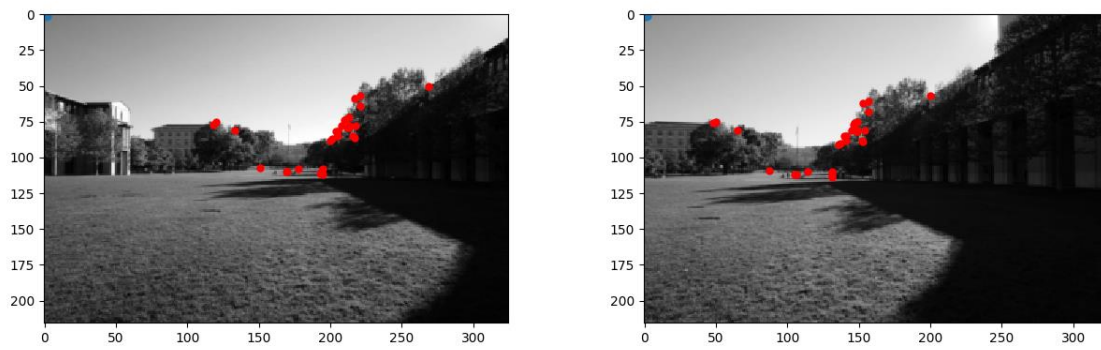
Corners Detected:



Matched Features:



Result after RANSAC:

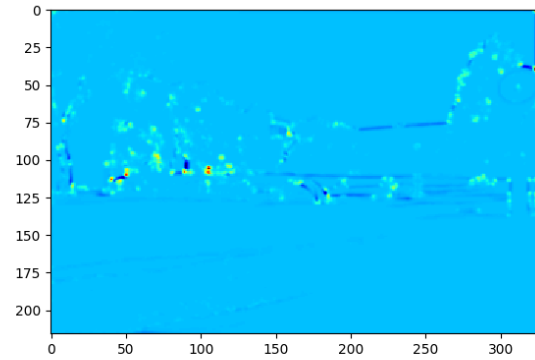
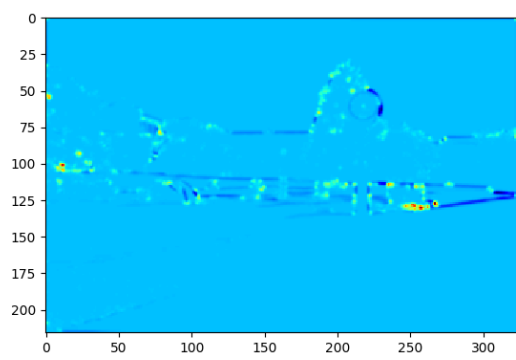


Final Result:

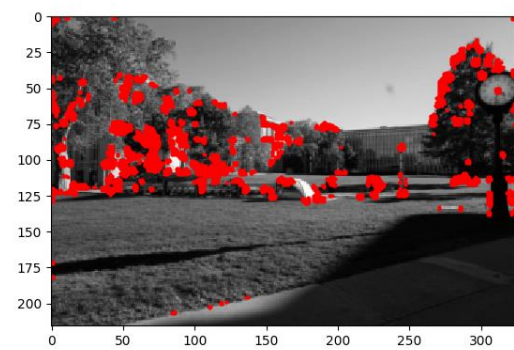
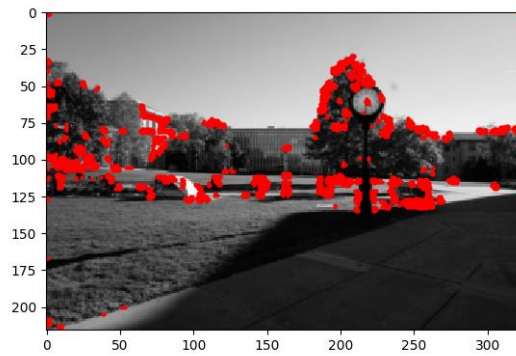


DATASET 5:

Corner Harris Response Map:



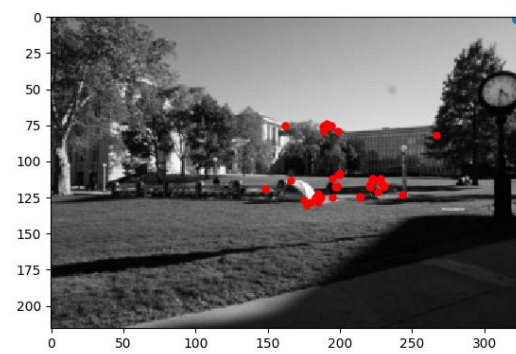
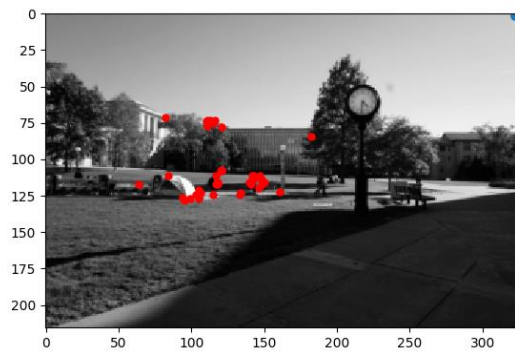
Corners Detected:



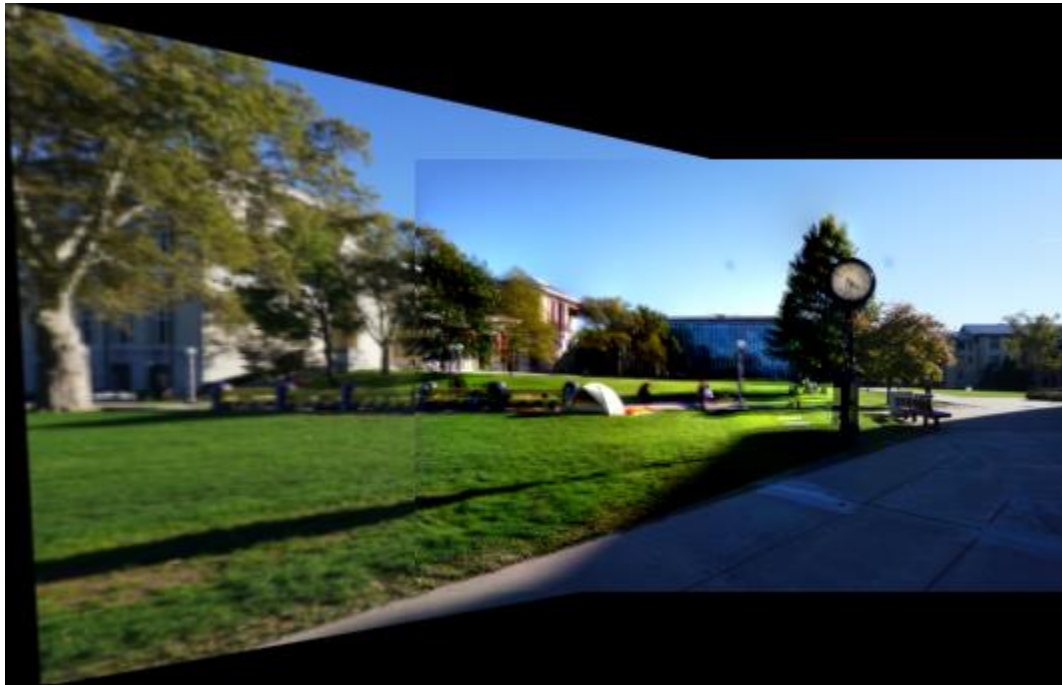
Features Matched:



After RANSAC:



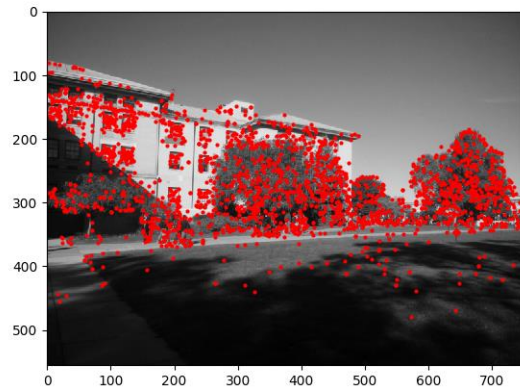
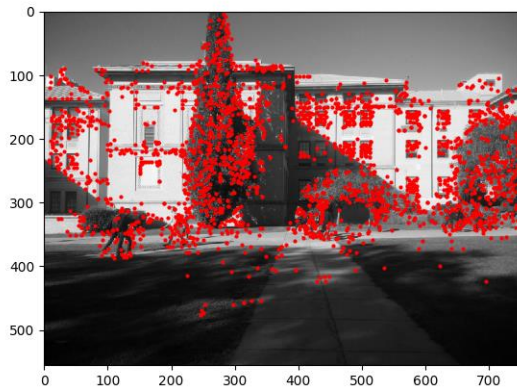
Final Result:



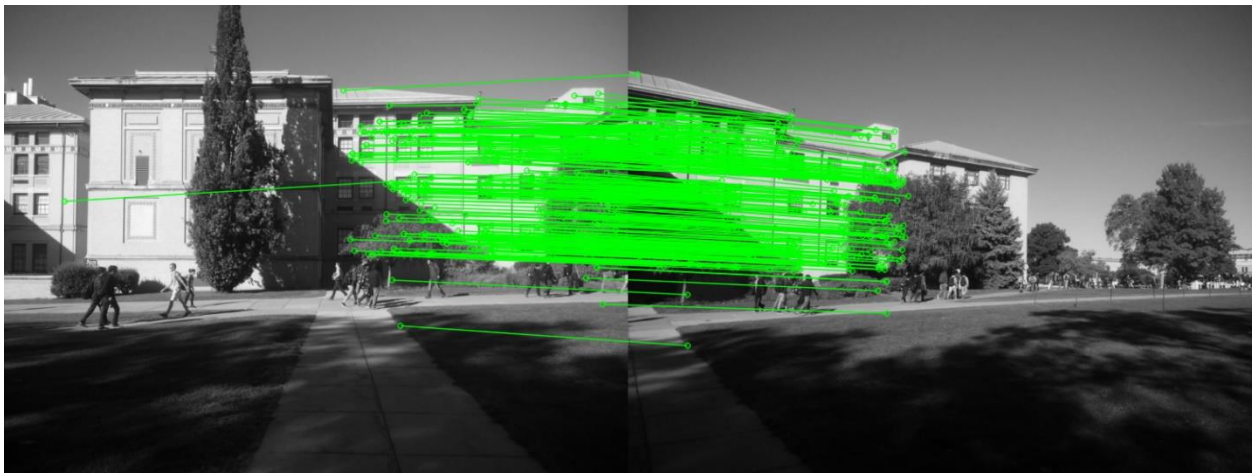
Following are the results obtained for project Image Stitching using **SIFT** features:

DATASET 1:

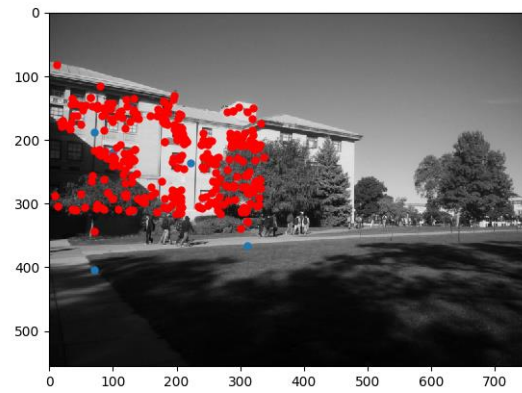
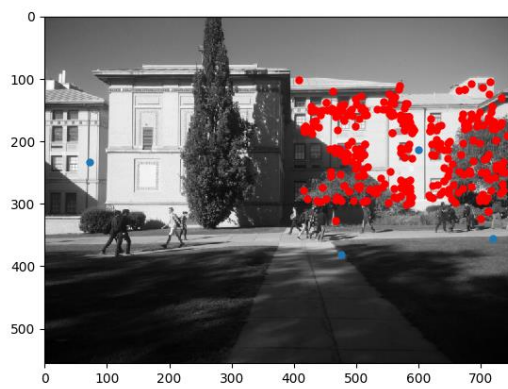
Corners detected using SIFT features:



Matched Features:

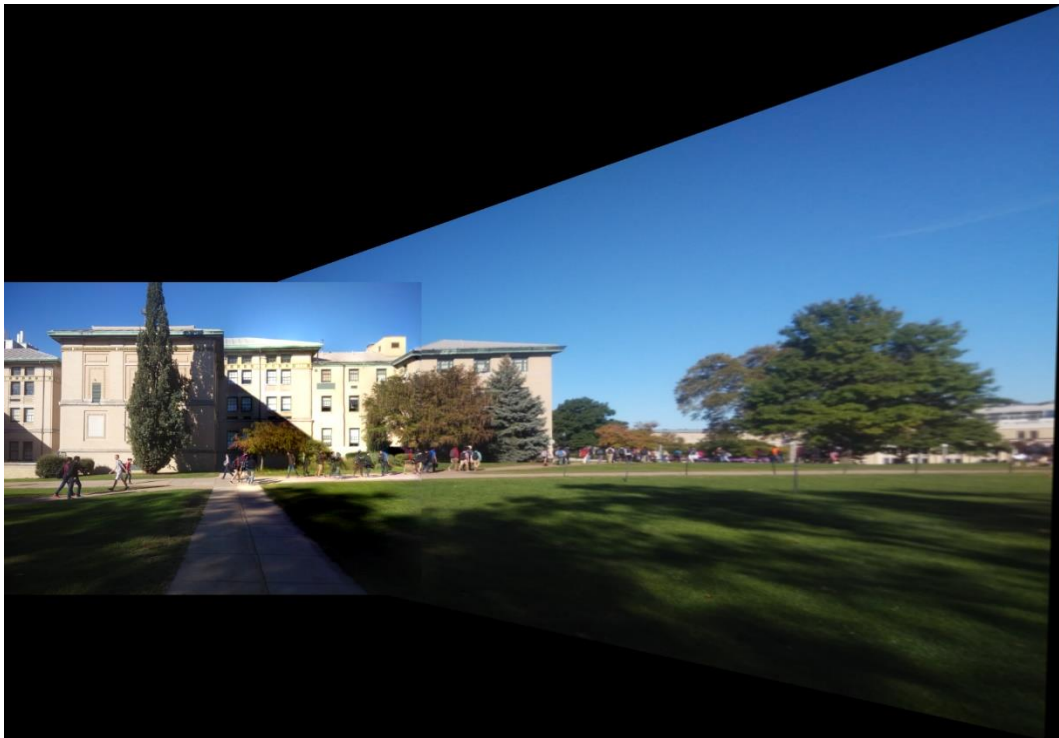


Results after RANSAC:



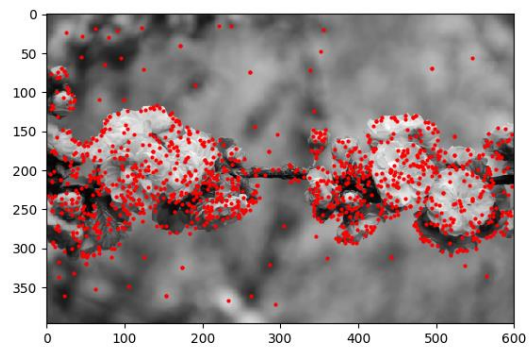
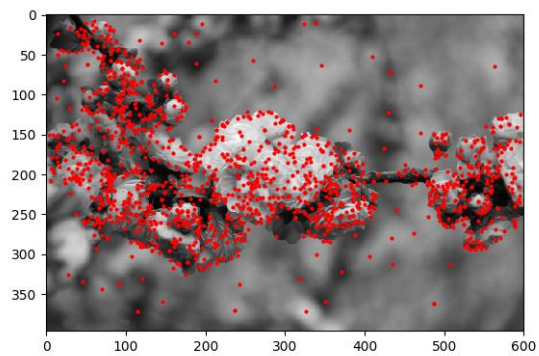
Note: **Red Dots:** Inliers, **Blue Dots:** Outliers

Result:

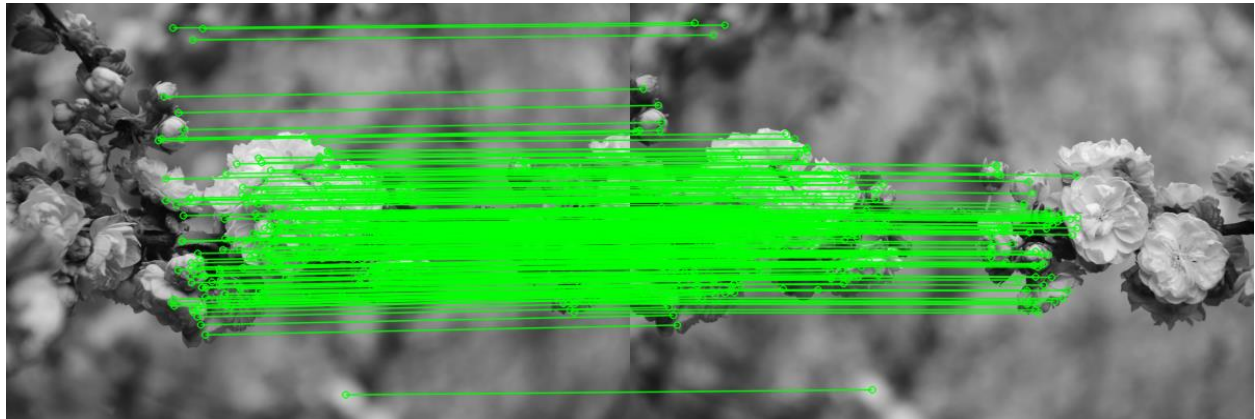


DATASET 2:

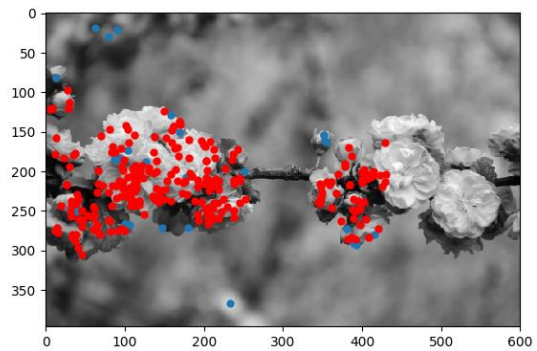
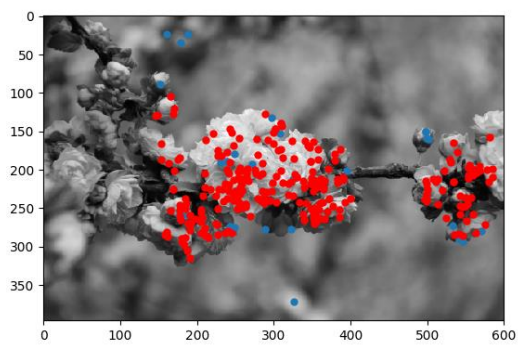
Corners detected using SIFT features:



Matched Features:



Result after RANSAC:



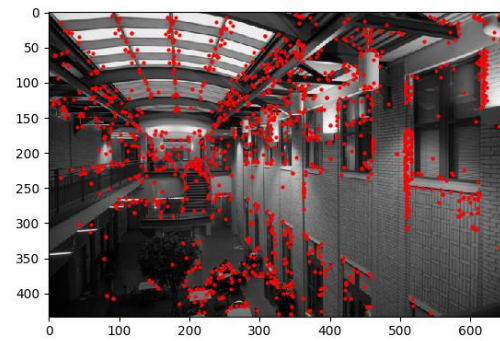
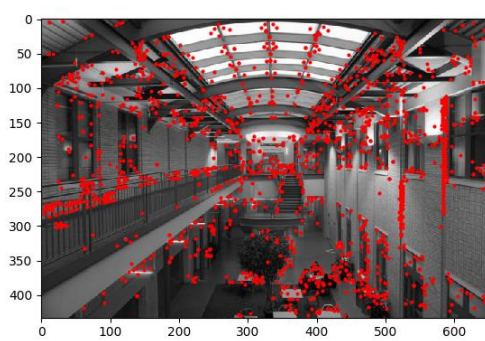
Note: Red Dots: Inliers, Blue Dots: Outliers

Result:



DATSET 3:

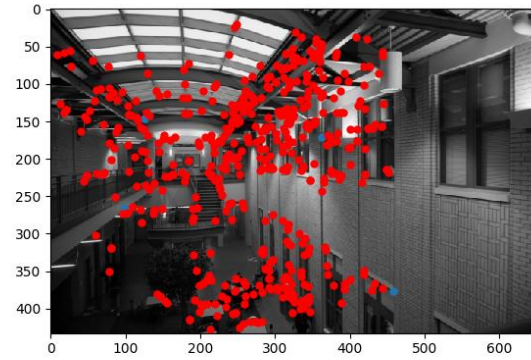
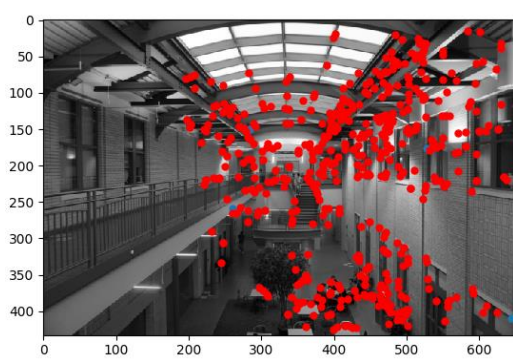
Corner Detected using SIFT features:



Matched Features:

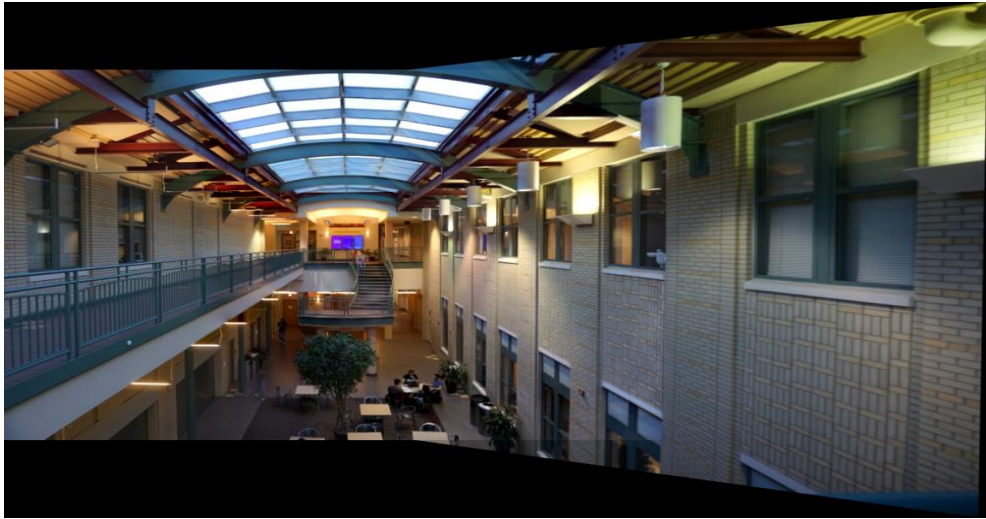


Result after RANSAC:



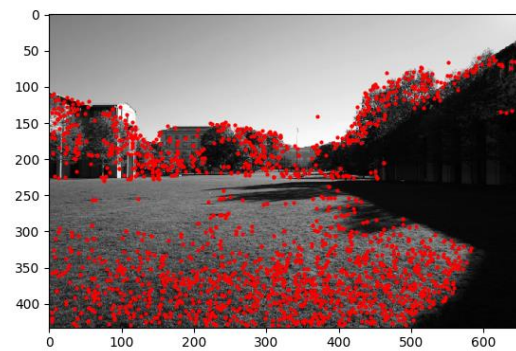
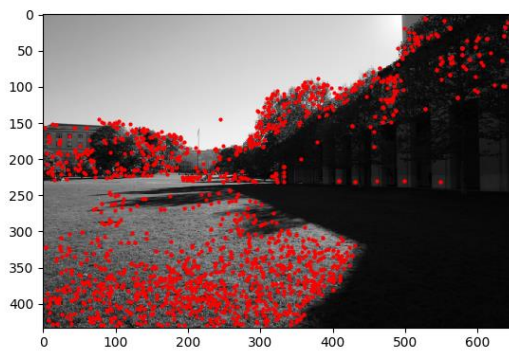
Note: Red Dots: Inliers, Blue Dots: Outliers

Result:

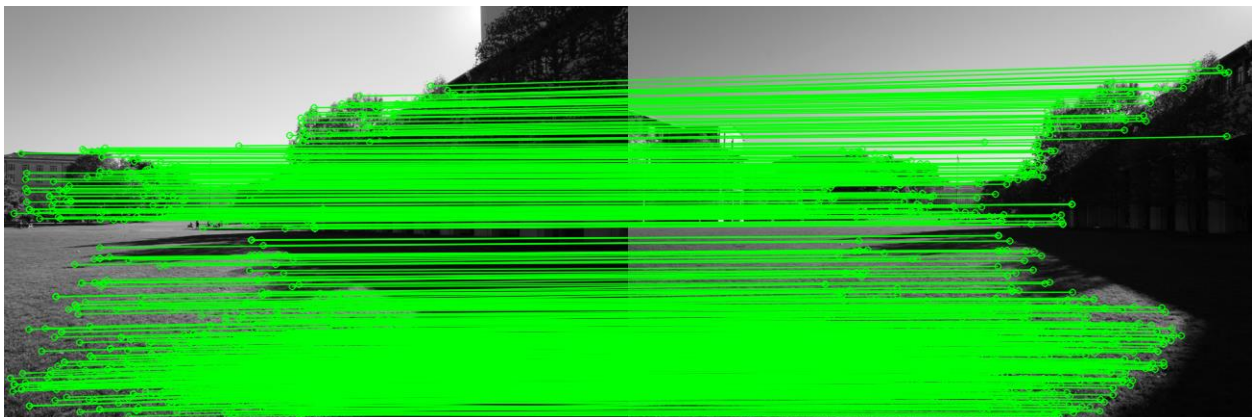


DATASET 4:

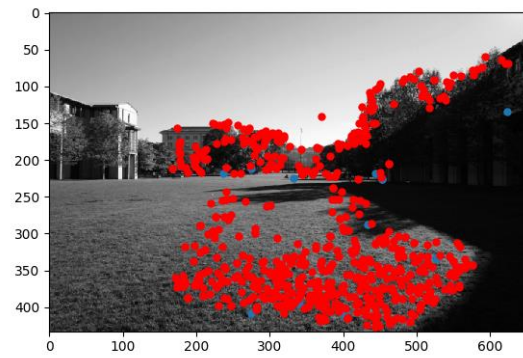
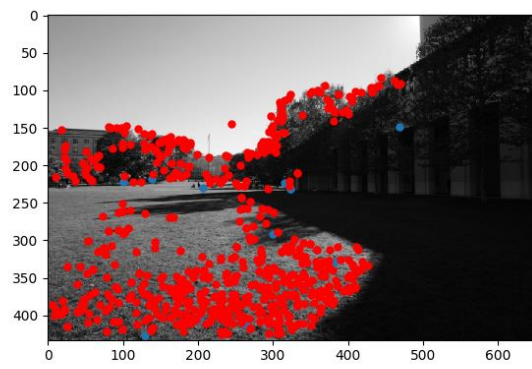
Corner Detected:



Matched Features:



Result after RANSAC:



Final Result:



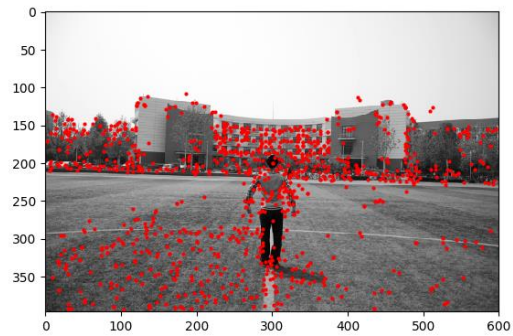
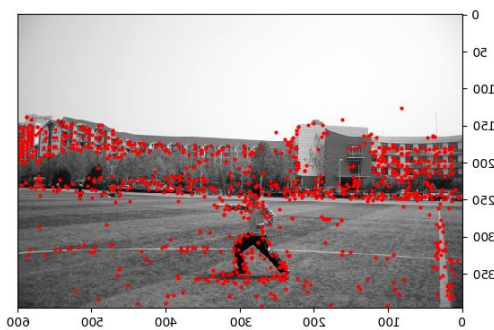


Note: Example for multiple outputs

INTERESTING TEST!

What if objects vanish in corresponding frames, we get ghosting effects for these objects:

Corner Points:



Final Result:



Notice the ghosting effects for the person.