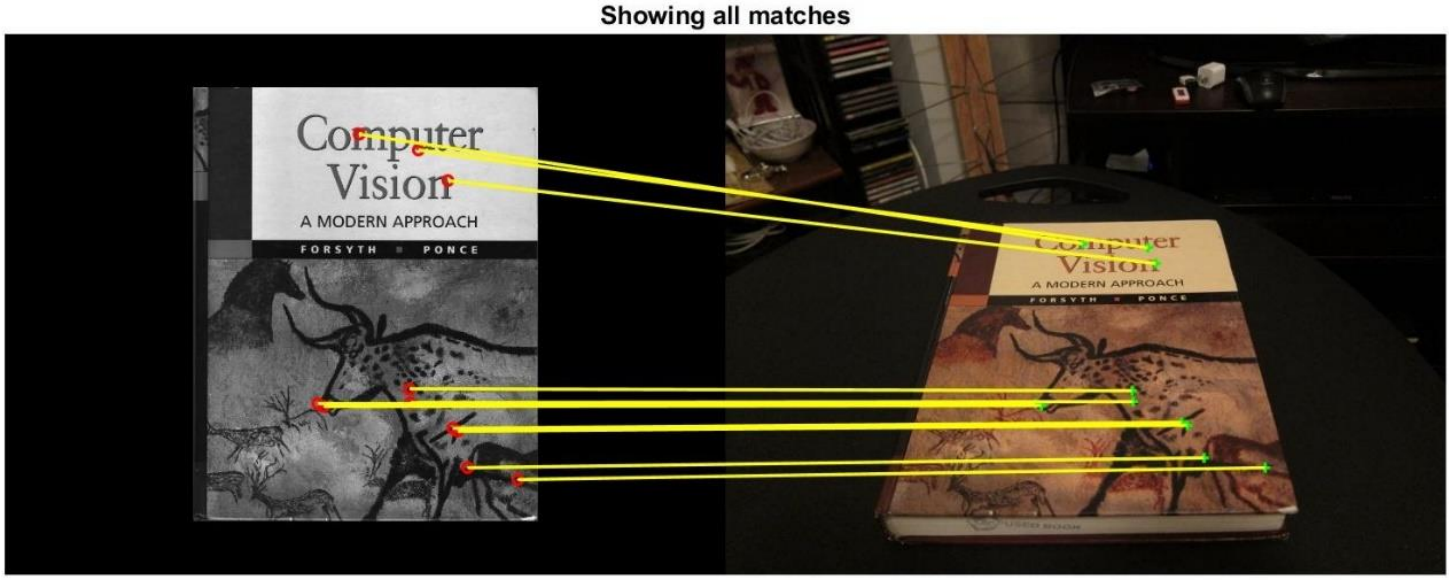
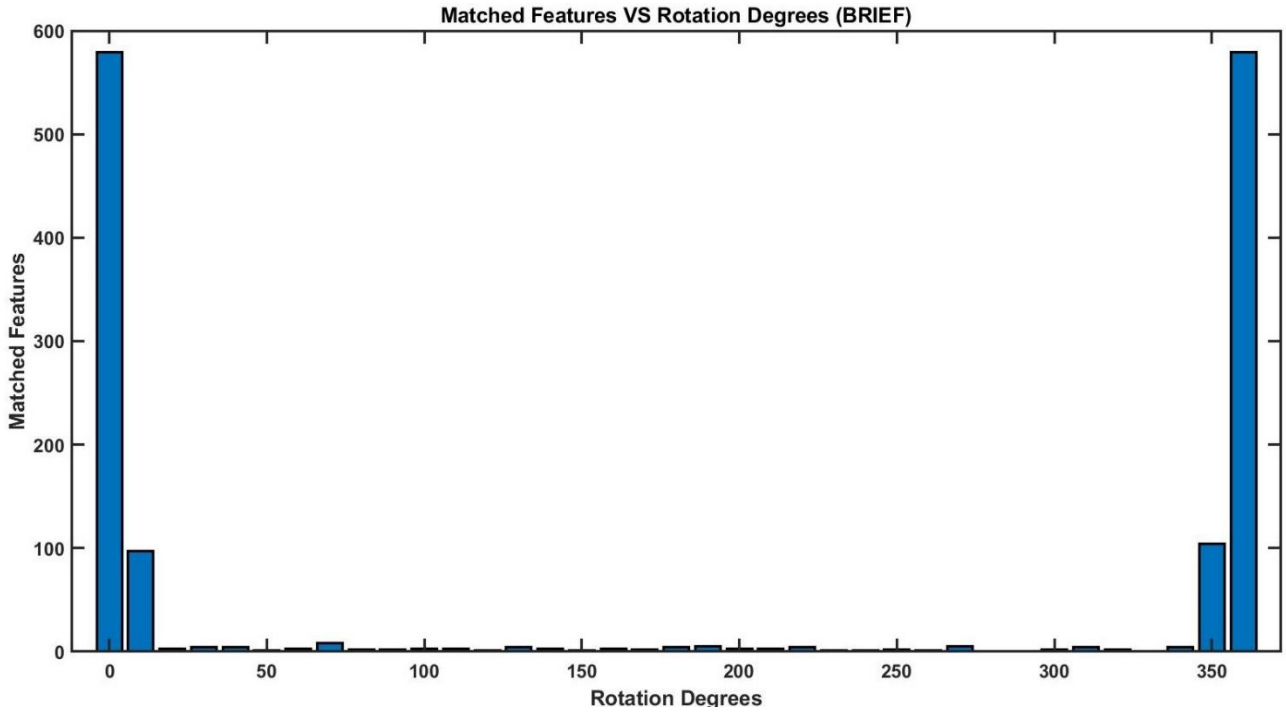
CMPT412 Assignment4 **(Use 1 free late day)**

Task 4.1
Run q2_1_4.m script.

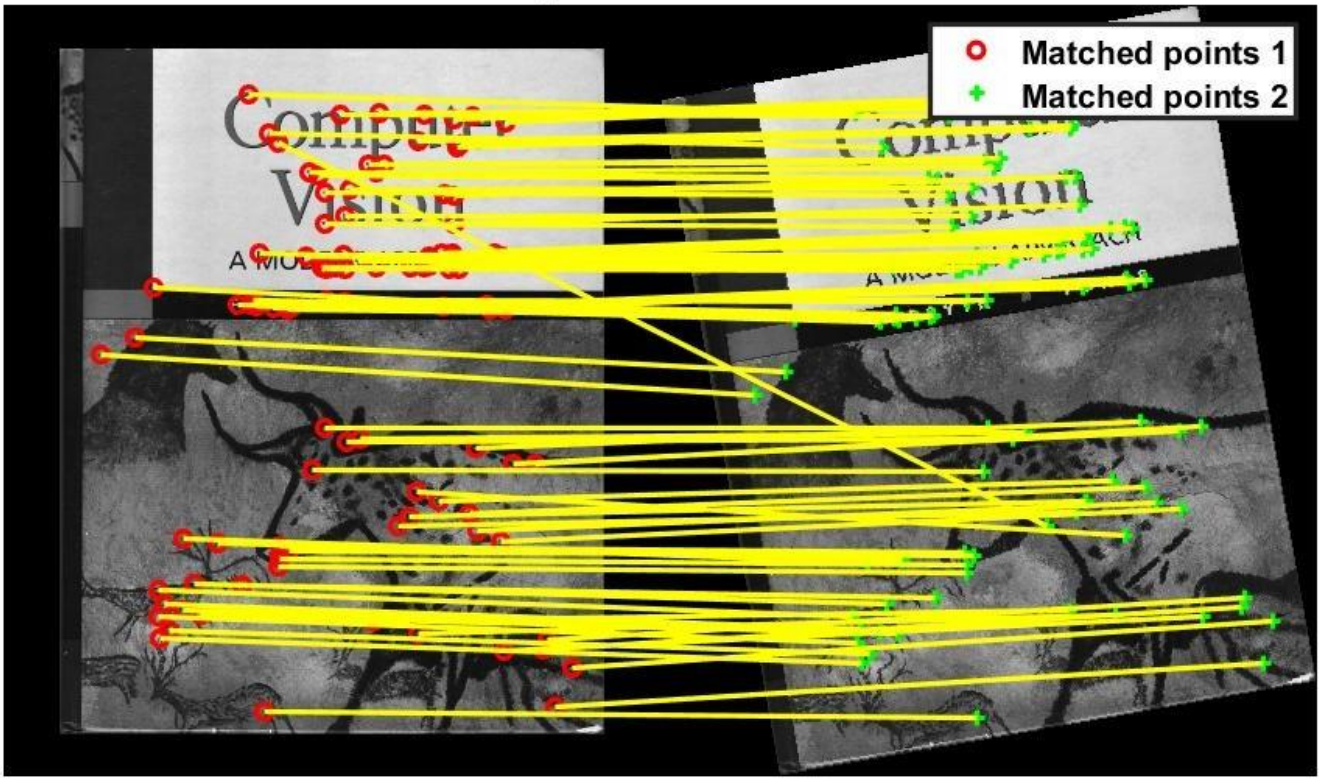


Task 4.2
Run briefRotTest.m.

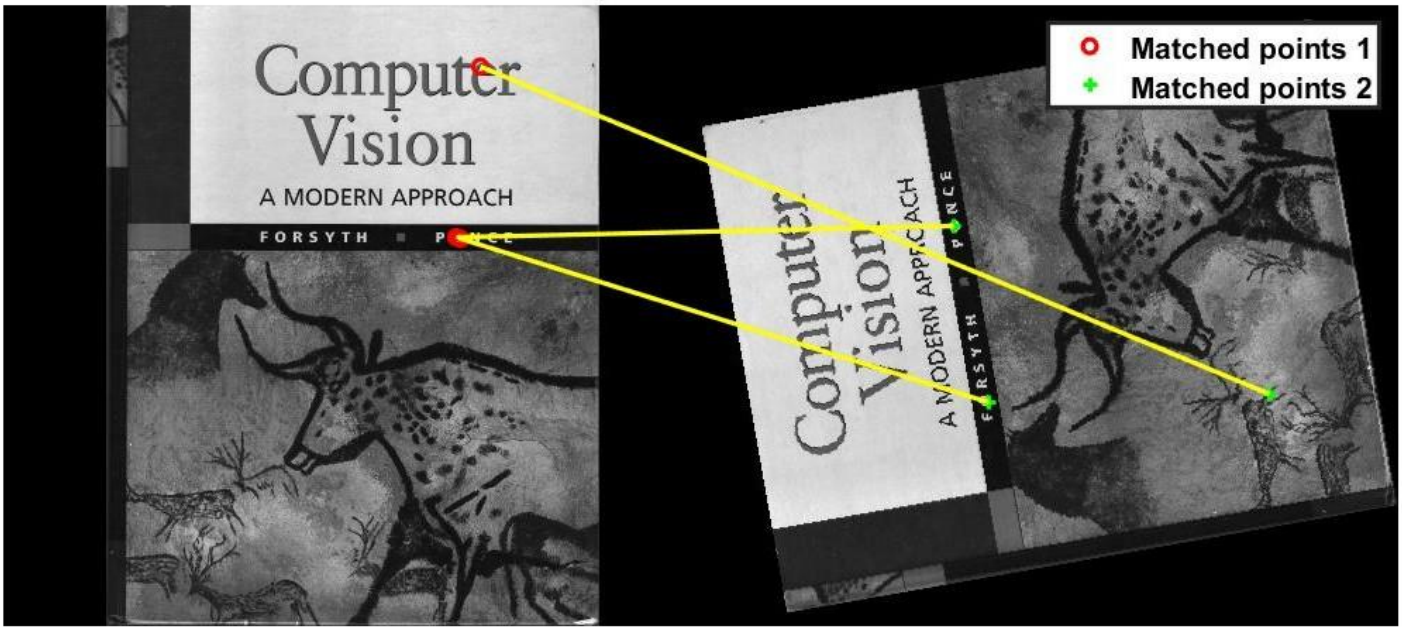
a) Using BRIEF descriptor

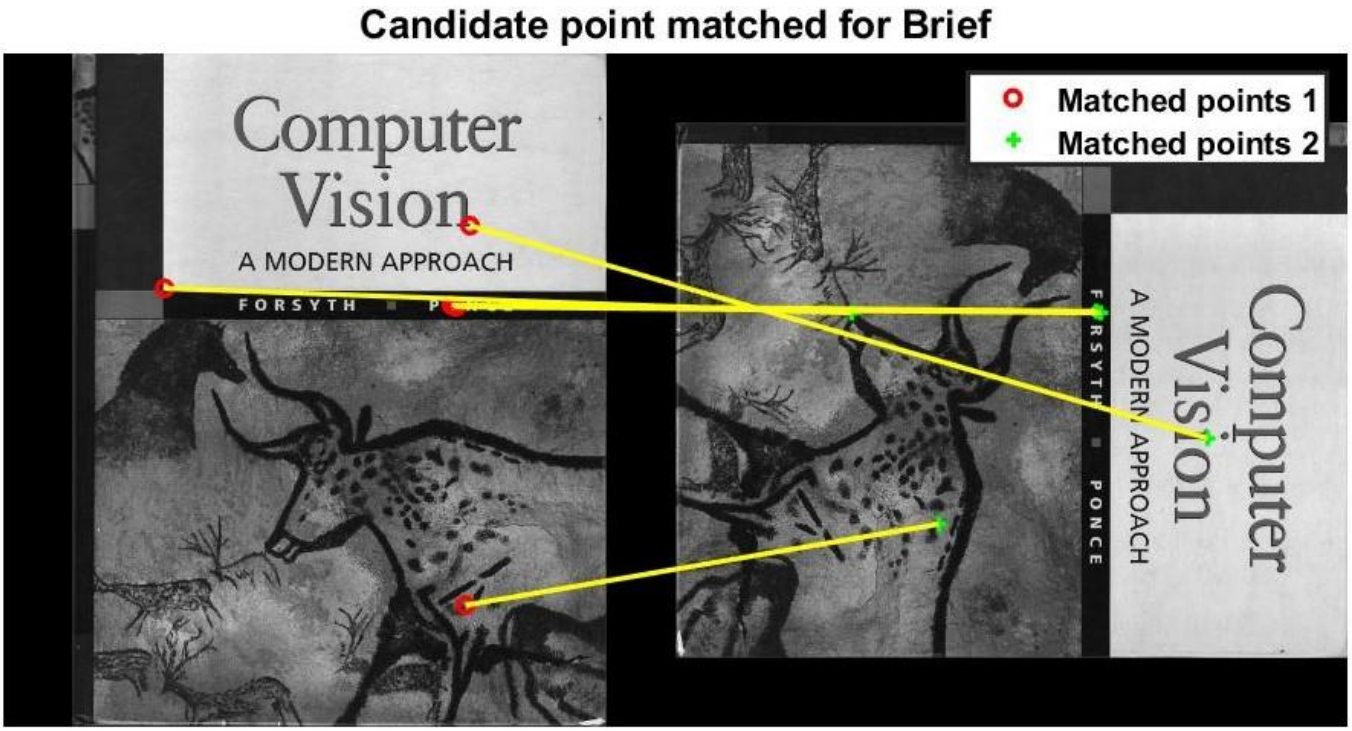


Candidate point matched for Brief

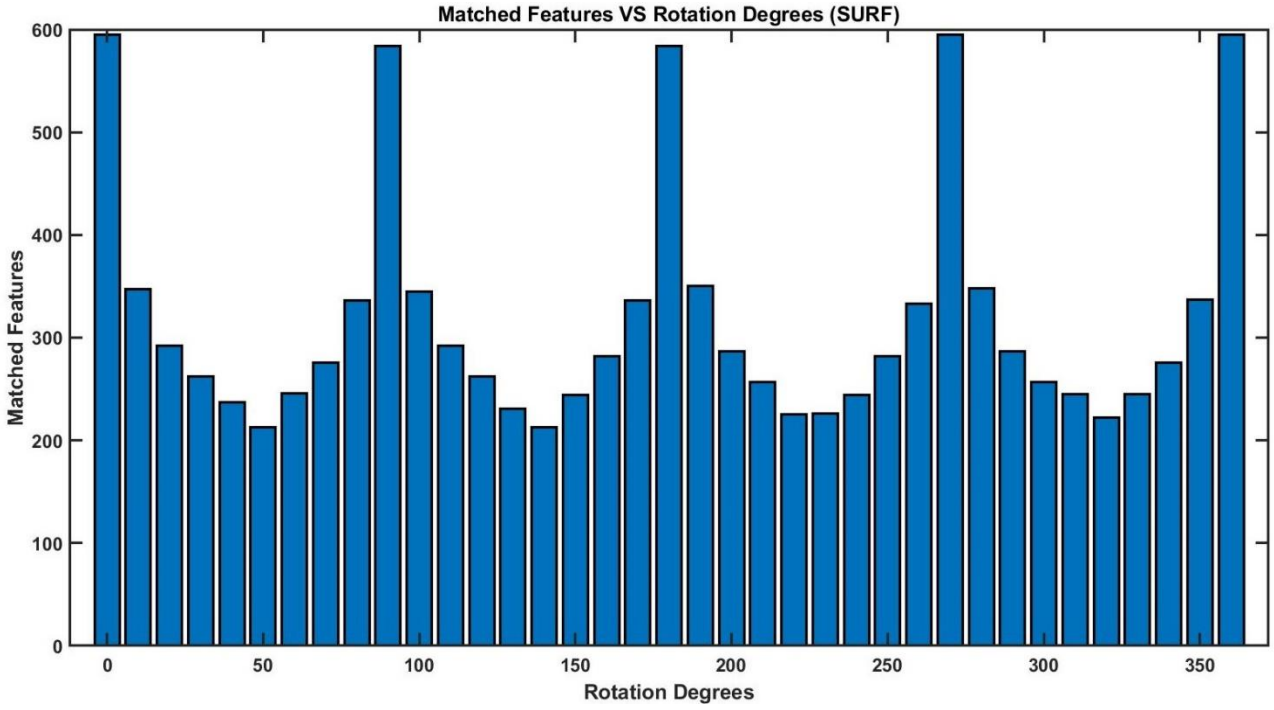


Candidate point matched for Brief

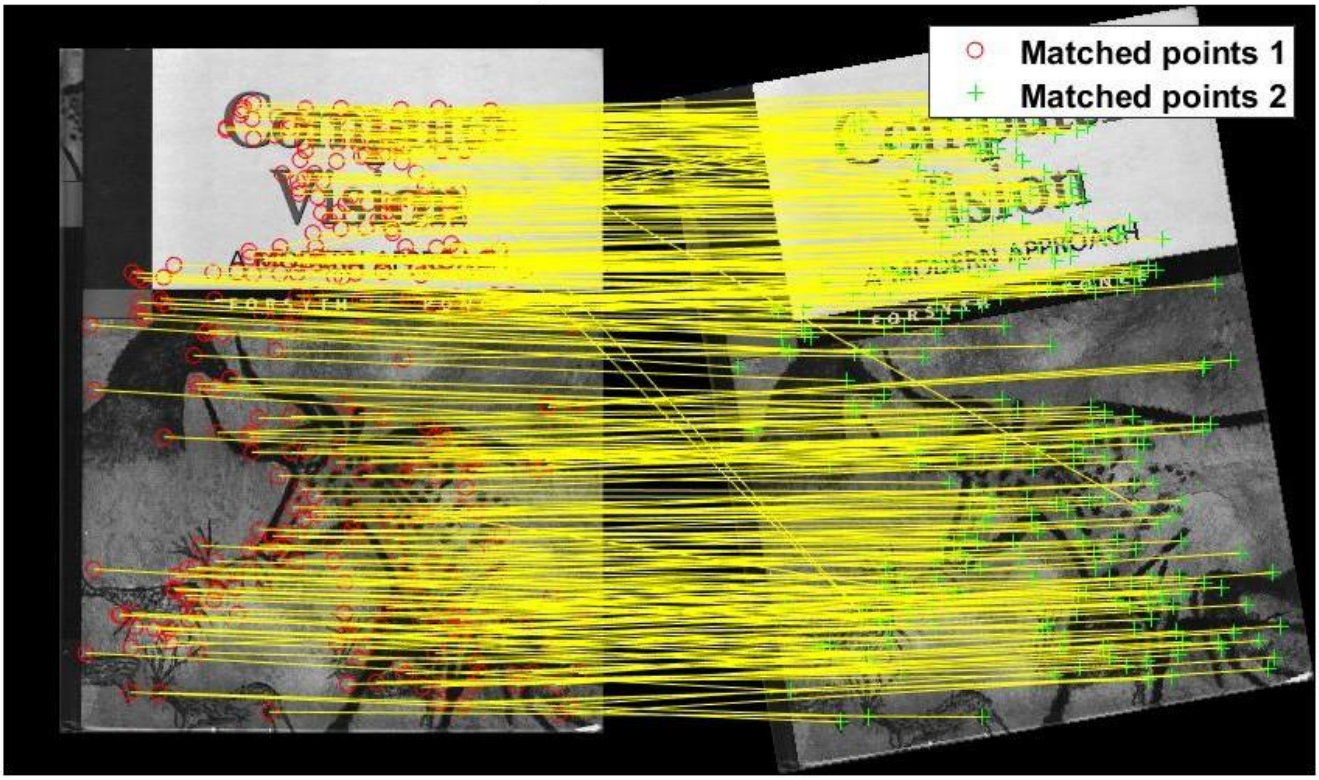




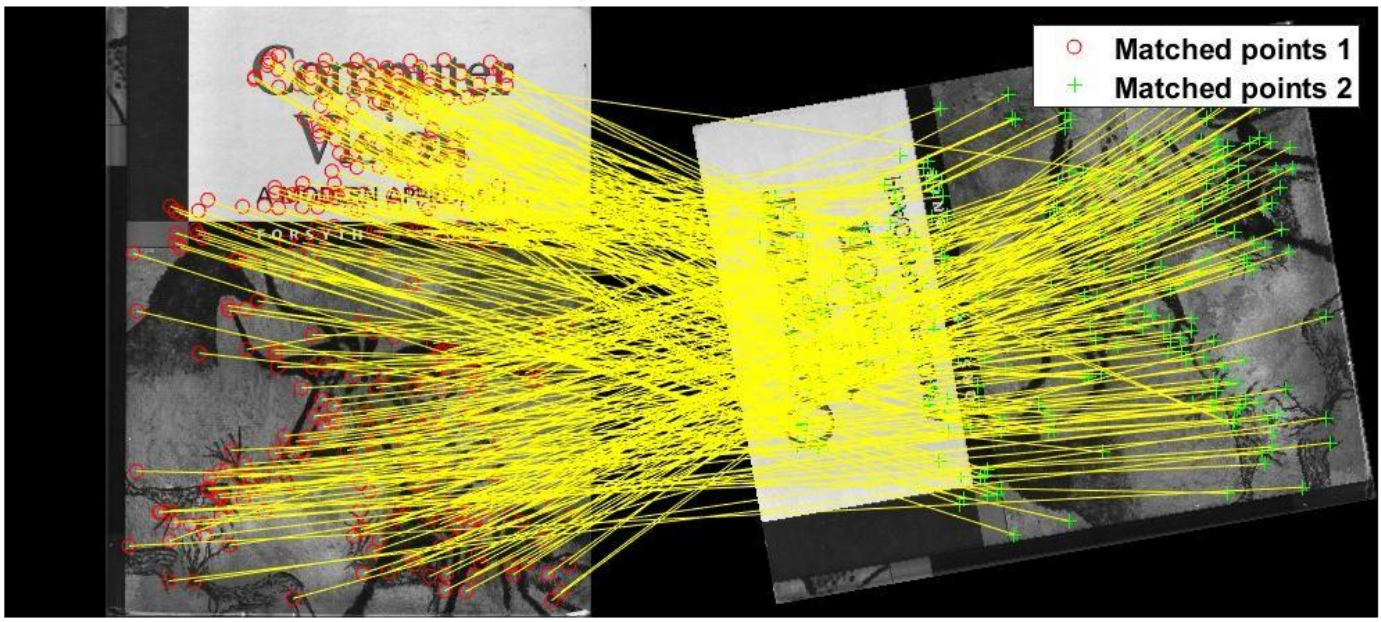
b) Using SURF descriptor

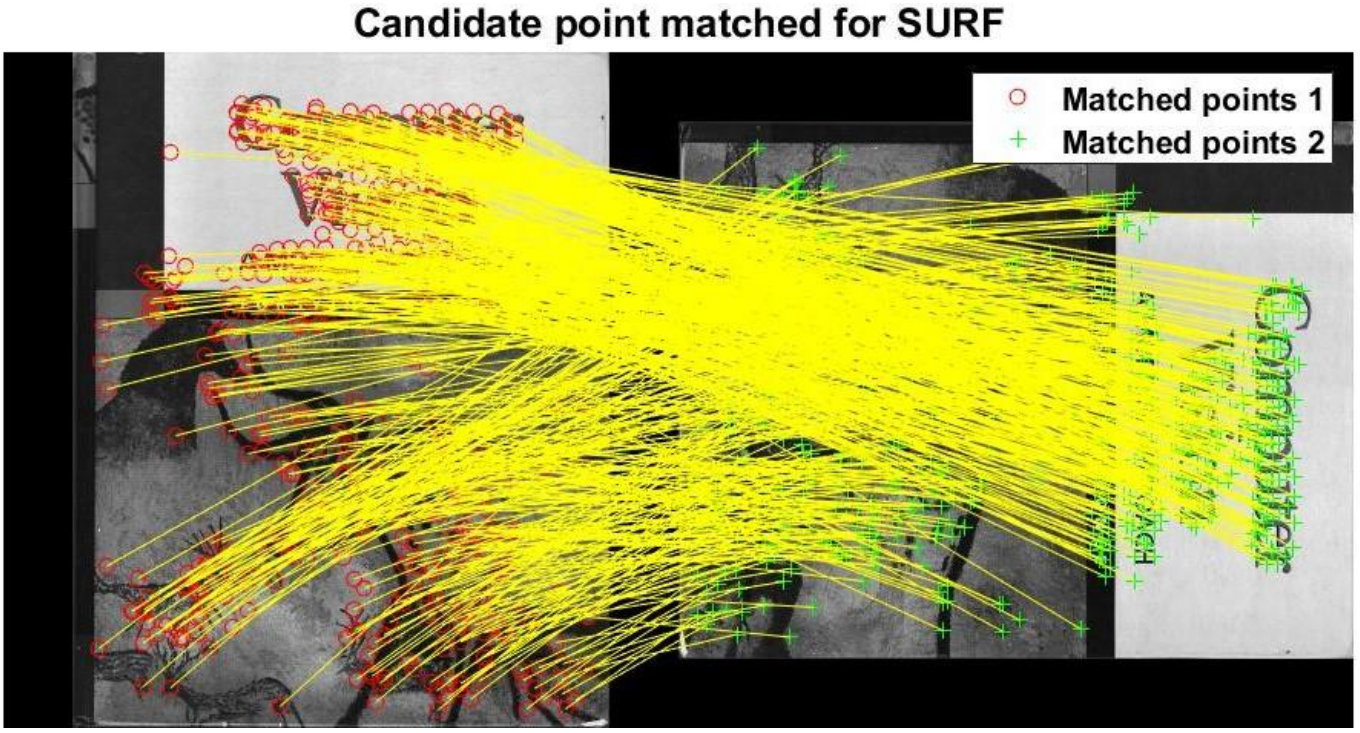


Candidate point matched for SURF



Candidate point matched for SURF



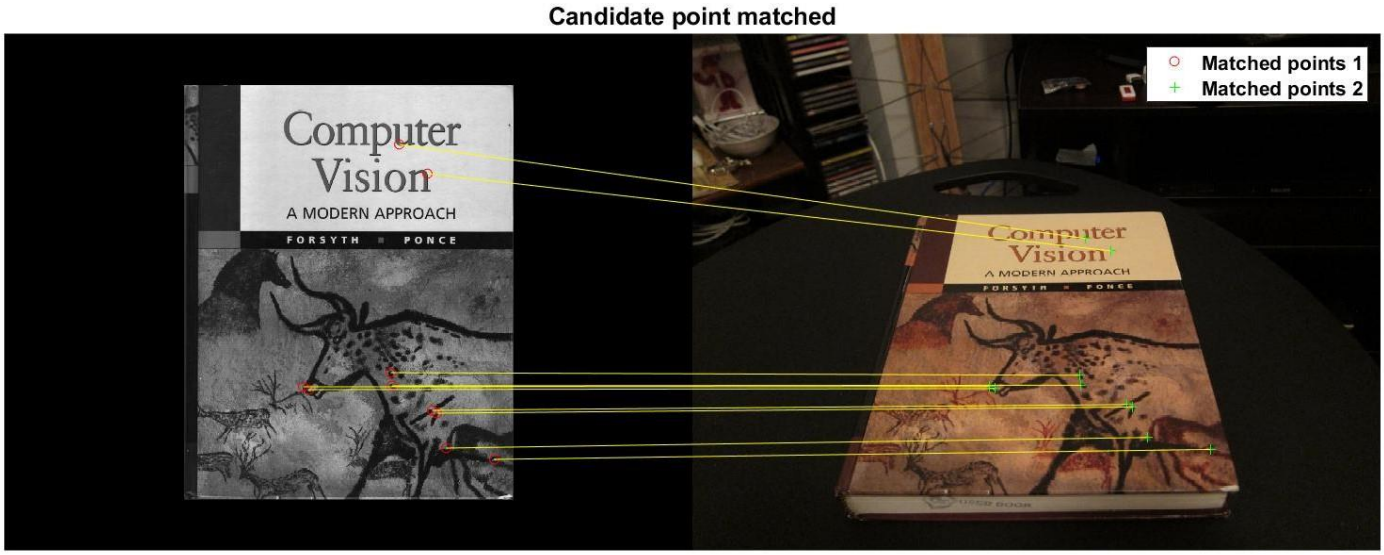


Explain why you think the BRIEF descriptor behaves this way. Does the plot change significantly after using a SURF descriptor?

A: As we can see from the plots, BRIEF does not work well with rotation. BRIEF descriptor is rotation variance, so the number of matched point pairs and the accuracy of those keep decreasing until that we rotate image back to its original picture. However, SURF descriptor can still gain many accurate corresponding points as images keep rotating since SURF is rotation invariance.

For BRIEF, it will create a signature, a binary vector, computed in N points around each keypoint. We choose N points based on the coordinate where the keypoint is origin. When we rotate image but the coordinate does not change. BRIEF cannot create correct binary vector for the keypoint.

Run test_visualization.m to get images for Task 4.3-4.5
Task 4.3
Homography Computation

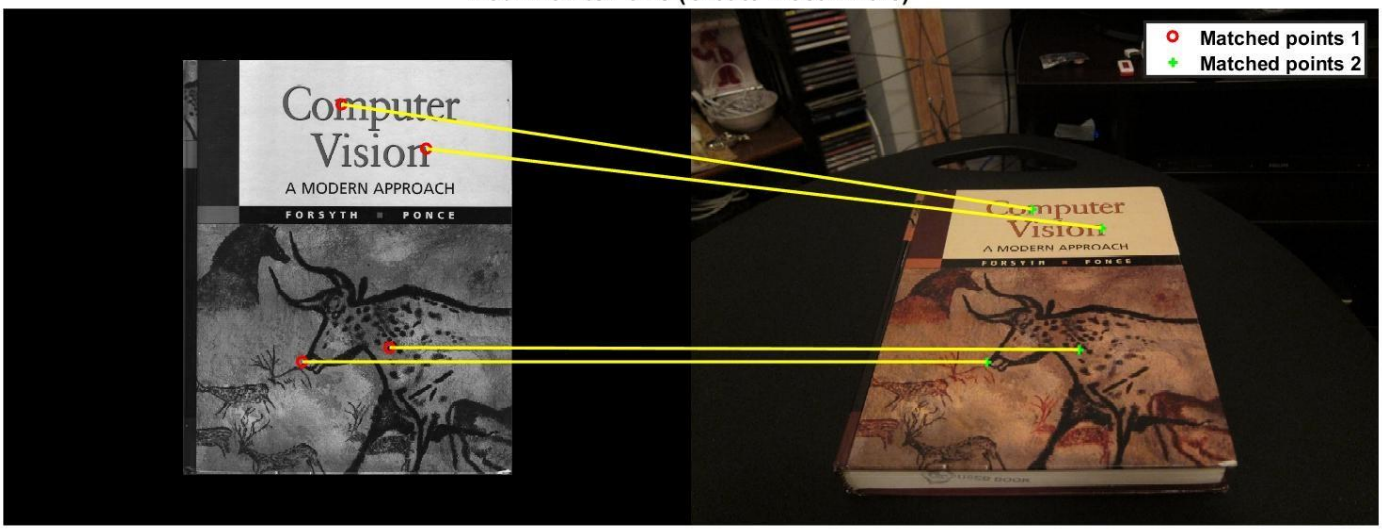


Task 4.4
Homograpy Normalization

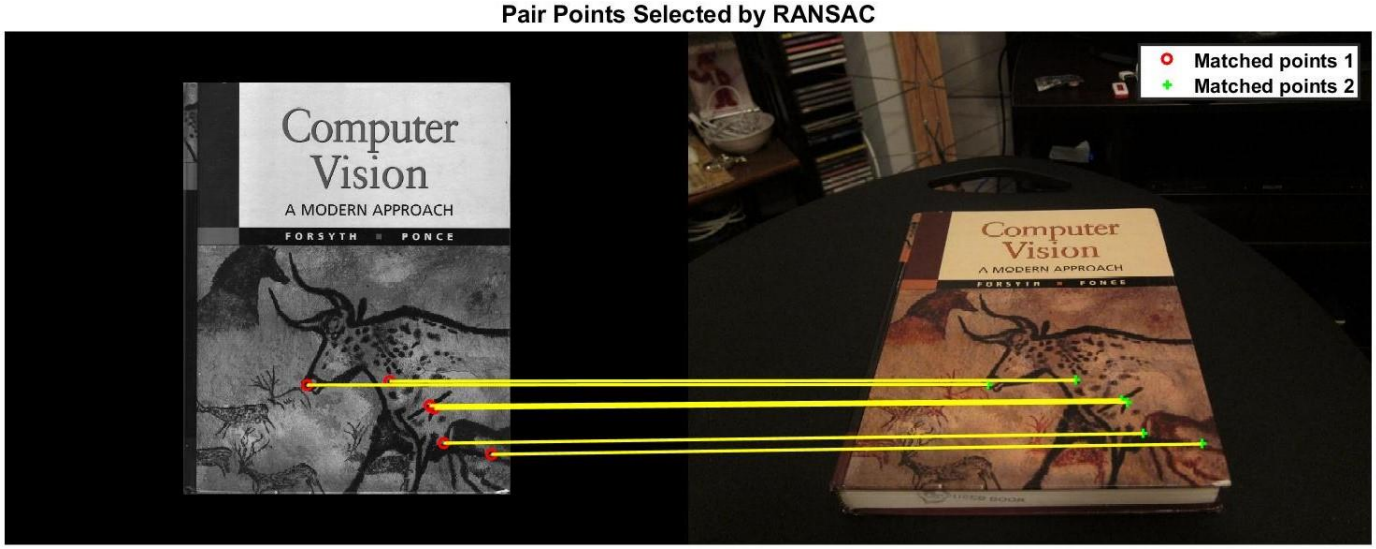
Candidate point matched

Task 4.5
RANSAC

Four Points Pairs (Create Most inliers)



Pair Points Selected by RANSAC



Task 4.6
Run HarryPotterize_auto.m.
HarryPotterizing a Book