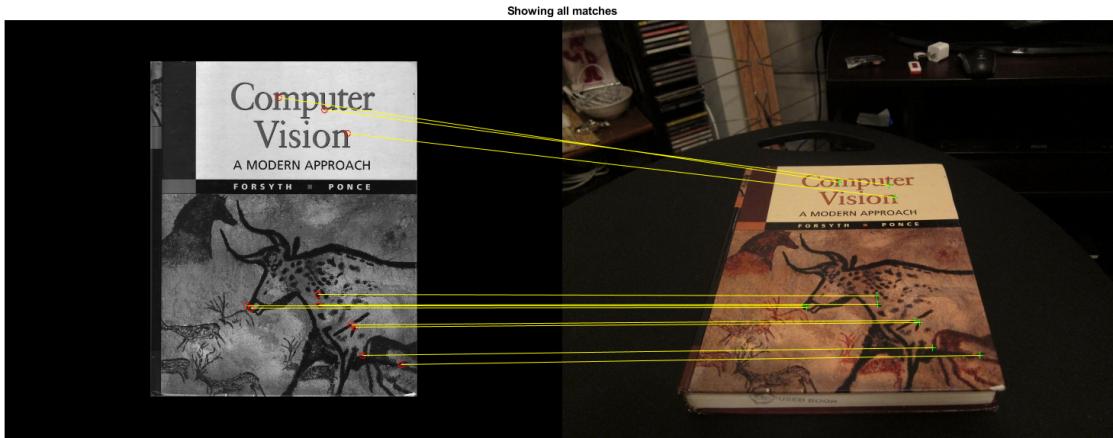


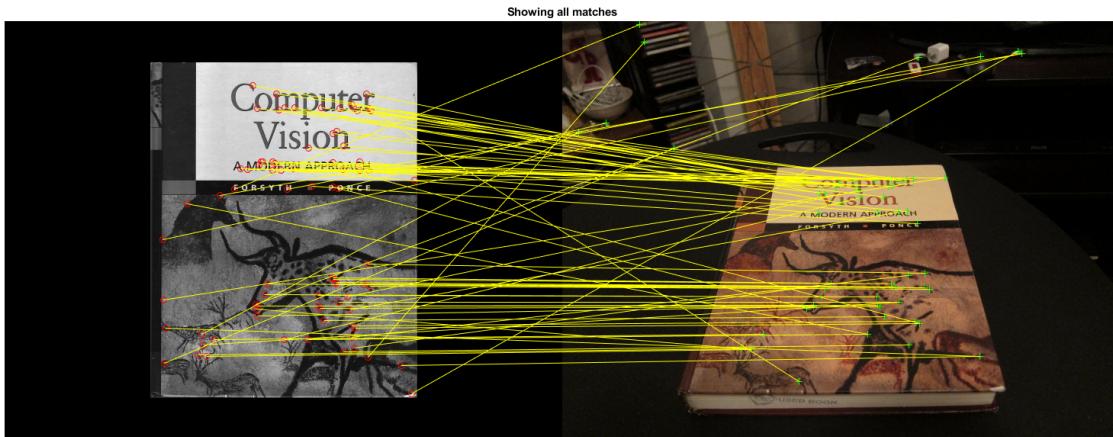
## 4. Tasks: Computing Planar Homographies

### 4.1. Feature Detection, Description, and Matching (3 pts)

With the suggestion of threshold 10, I tried different Ratios and found out that using 0.68 has the best performance. Below is the computeBRIEF using matchPics:

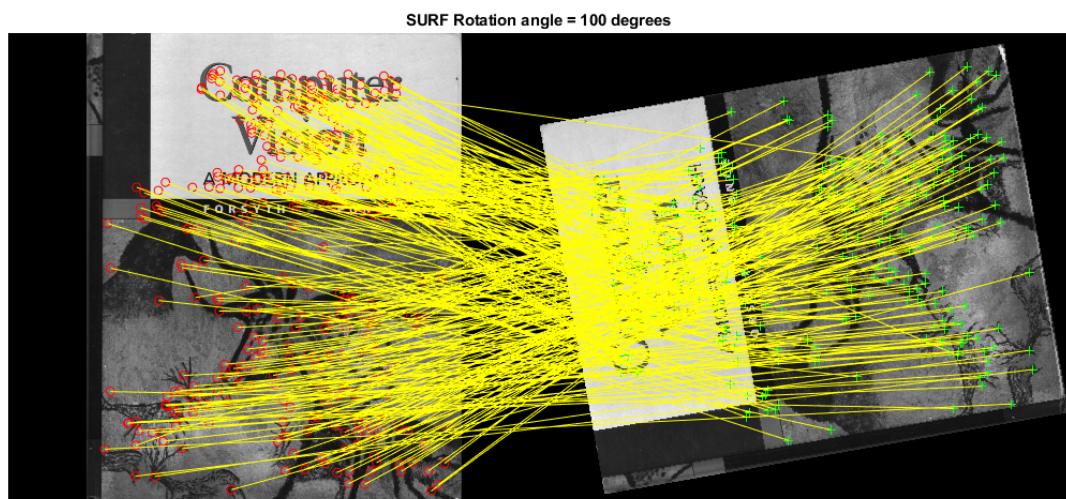
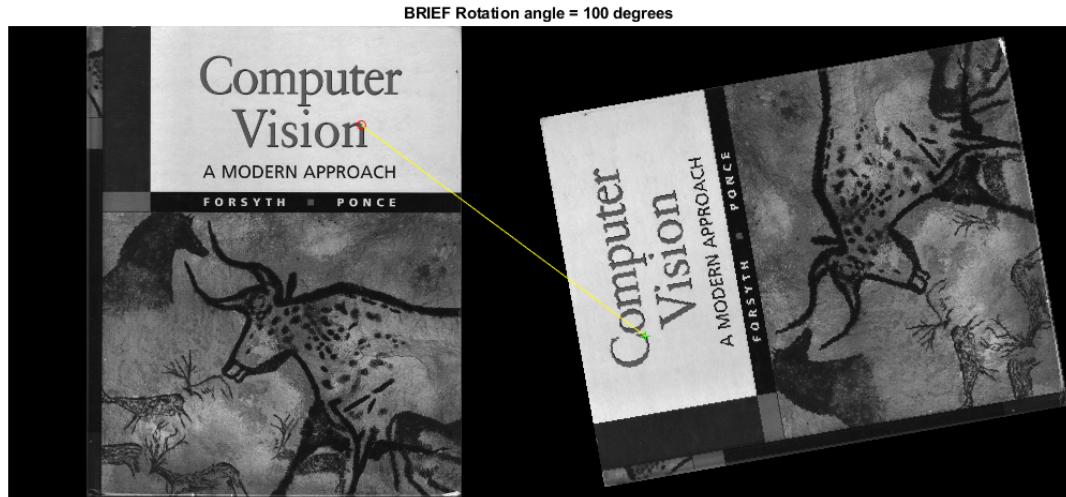


Compare with the built-in extractFeatures:

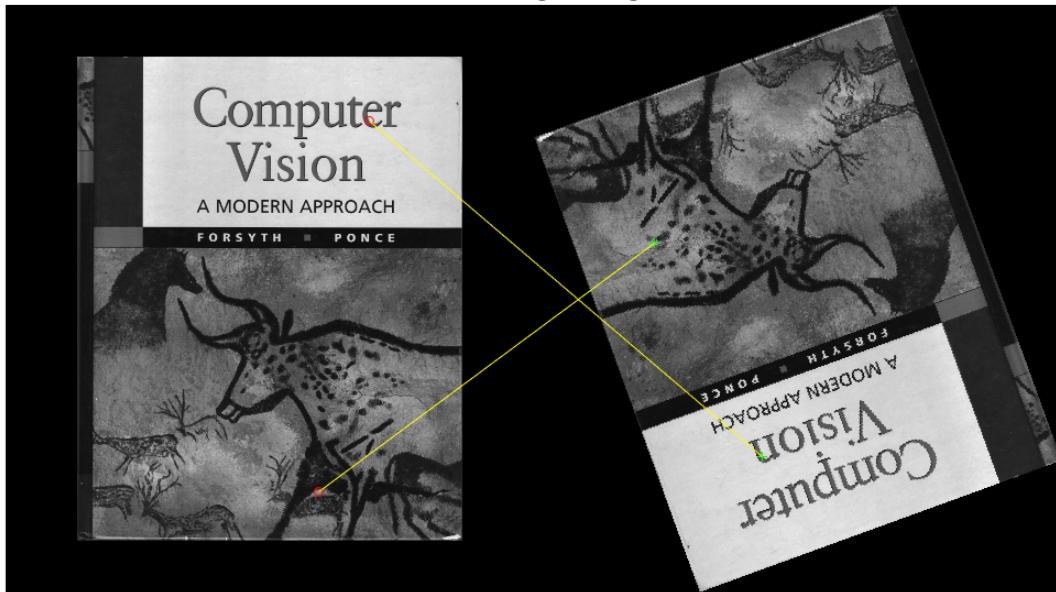


## 4.2. BRIEF and Rotations (3 pts)

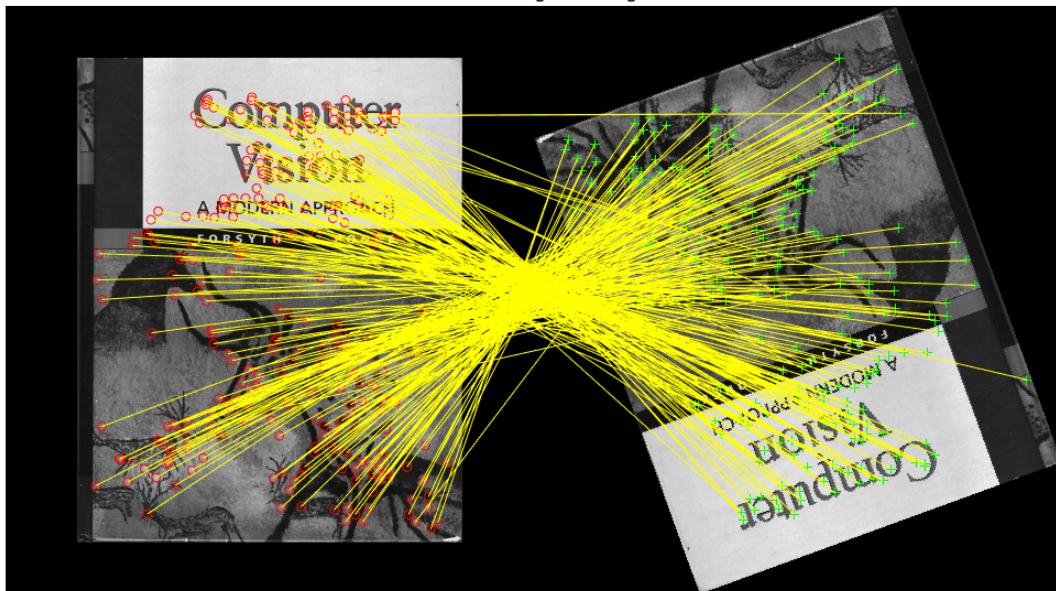
Showing the difference between BRIEF and SURF with 100, 200, and 300 degrees:



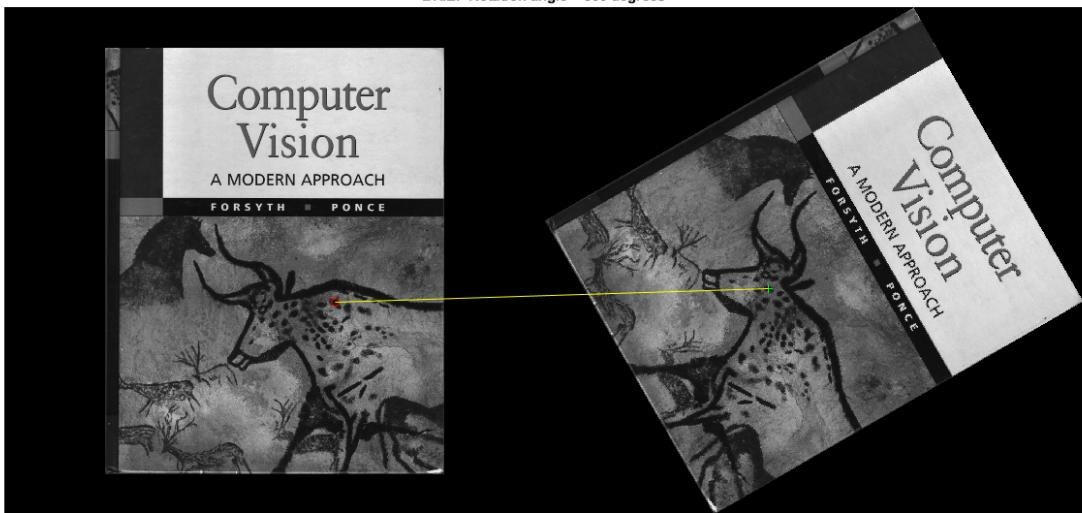
BRIEF Rotation angle = 200 degrees



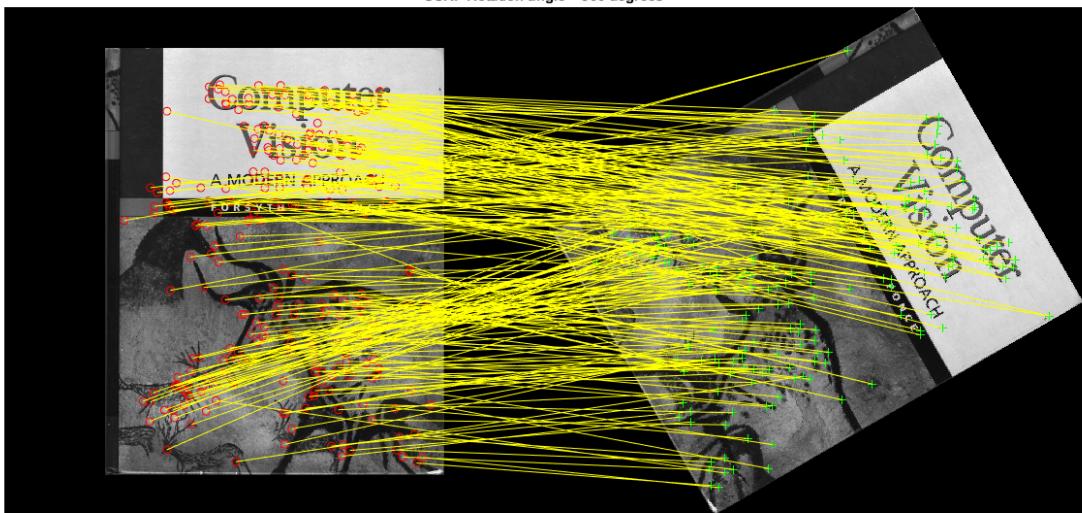
SURF Rotation angle = 200 degrees



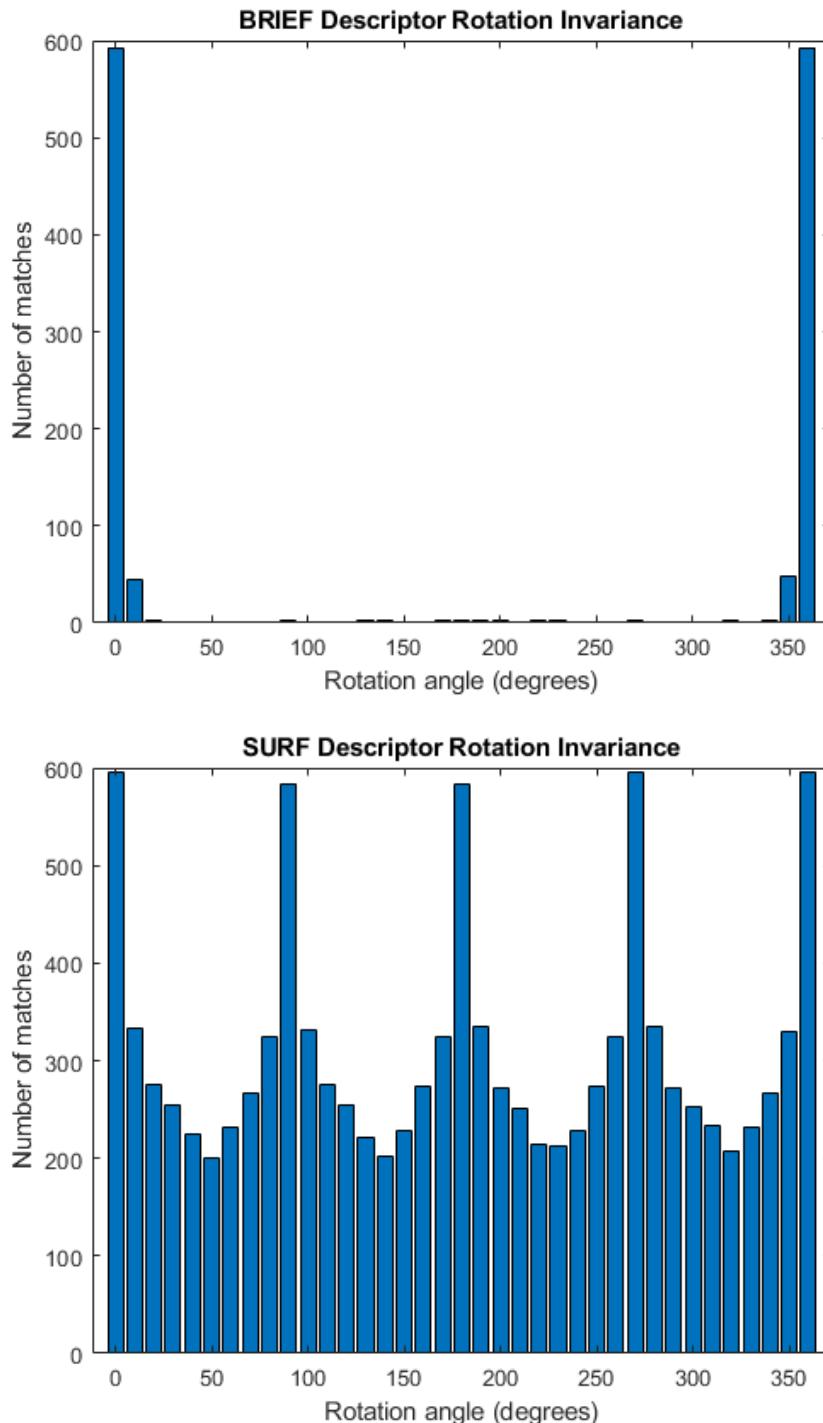
BRIEF Rotation angle = 300 degrees



SURF Rotation angle = 300 degrees

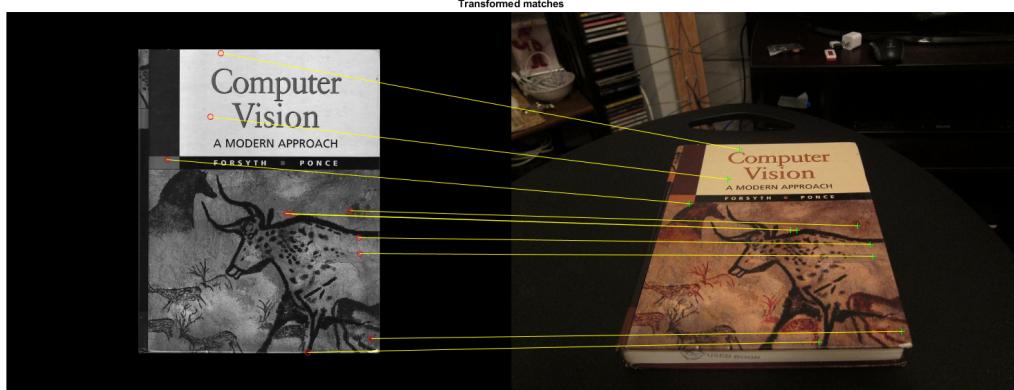


Corresponding histograms shows invariance upon rotations, SURF performs better especially when it is at the sharp angle of 90.



### 4.3. Homography Computation (3 pts)

10 random points. Please refer to homographytest.m to perform computeH.



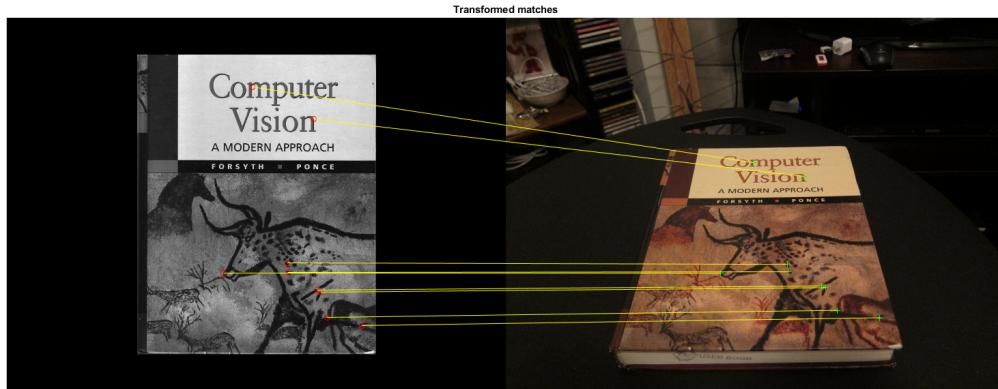
### 4.4. Homography Normalization (2 pts)

10 random points. Please refer to homographytest.m to perform computeH\_norm.

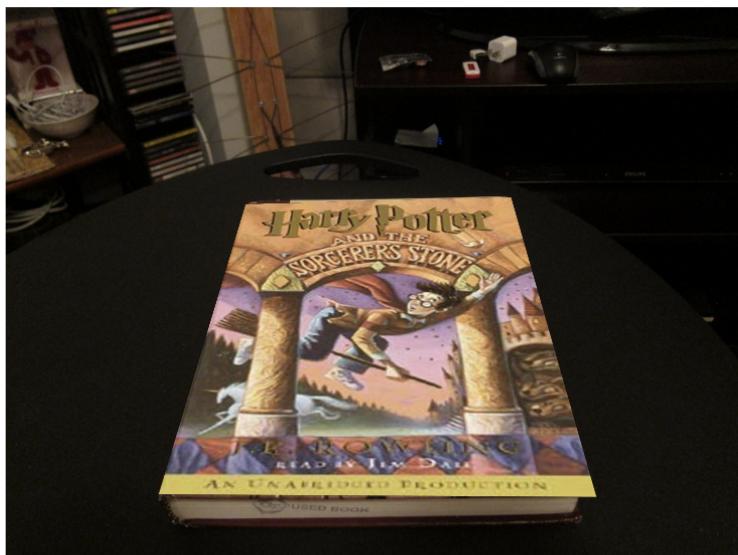


#### 4.5. RANSAC (2 pts)

10 random points using 4 points-pairs. Please refer to homographytest.m to perform computeH\_ransac.



#### 4.6. HarryPotterizing a Book (2 pts)



#### 5. Creating your Augmented Reality application (2 pts)

Please refer to the results/vid.mp4