Project 2
Augmented Reality with Planar Homographies

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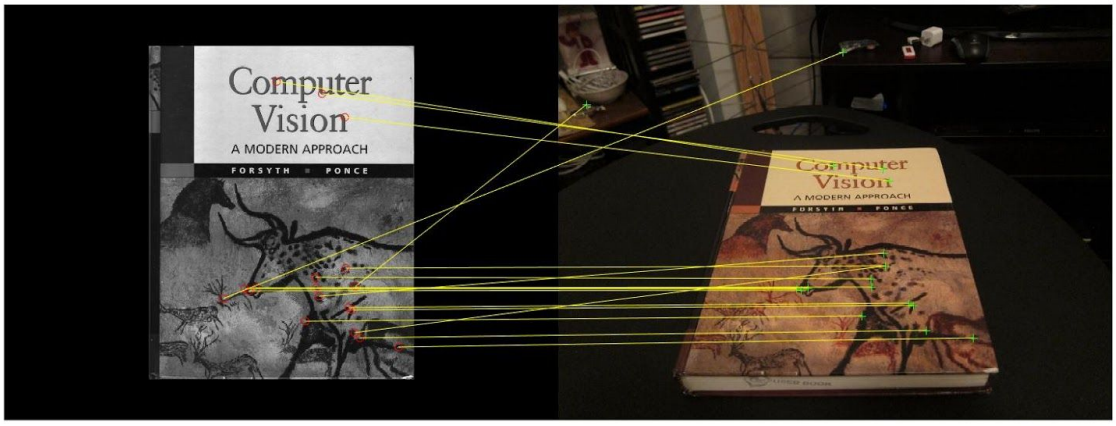
4. Tasks: Computing Planar Homographies

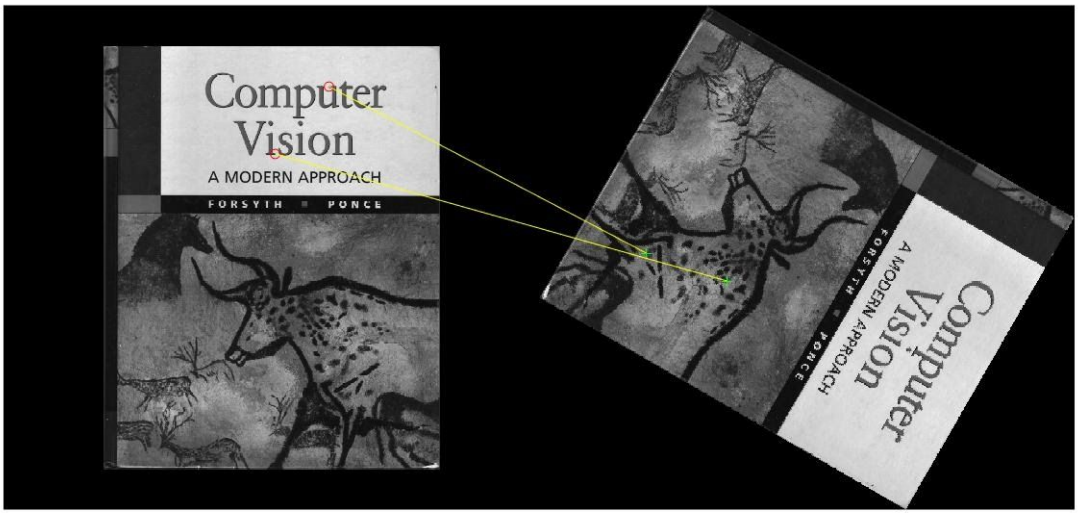
4.1. Feature Detection, Description, and Matching (3 pts)

Here is the result of my code:
I used max ratio of 0.7 for this output.



4.2. BRIEF and Rotations (3 pts)

Here are the results with BRIEF descriptor:
I used three angles of 80, 250 and 300.
As you can see in the histogram, with rotation BRIEF descriptor does not give good results.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A MODERN APPROACH
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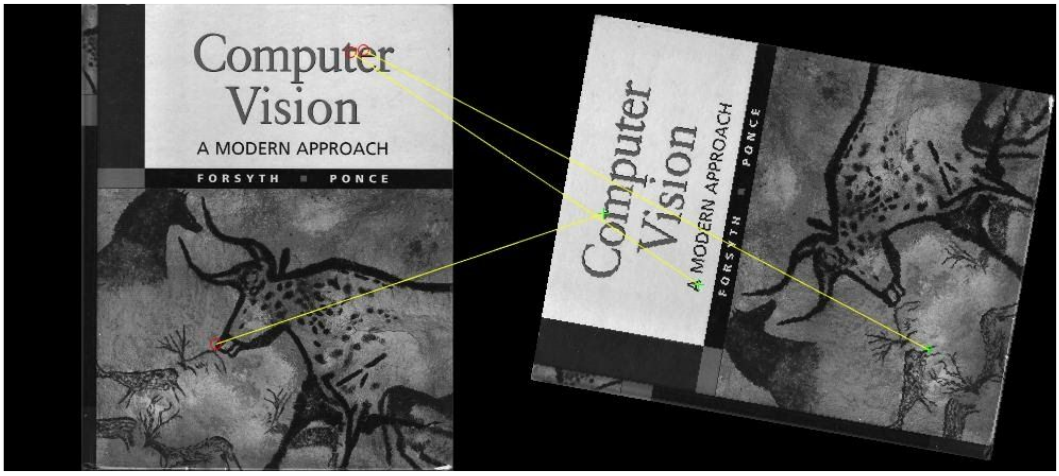
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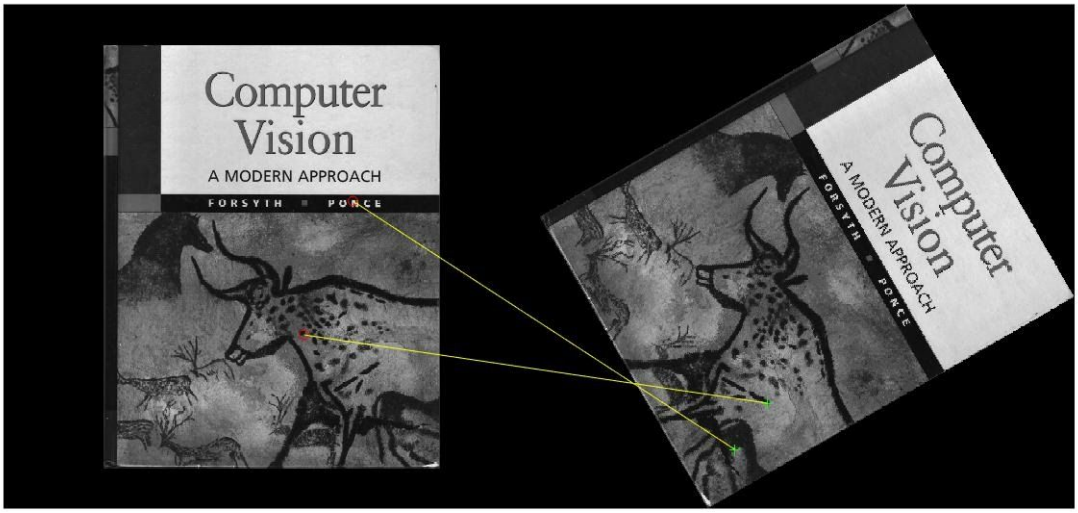
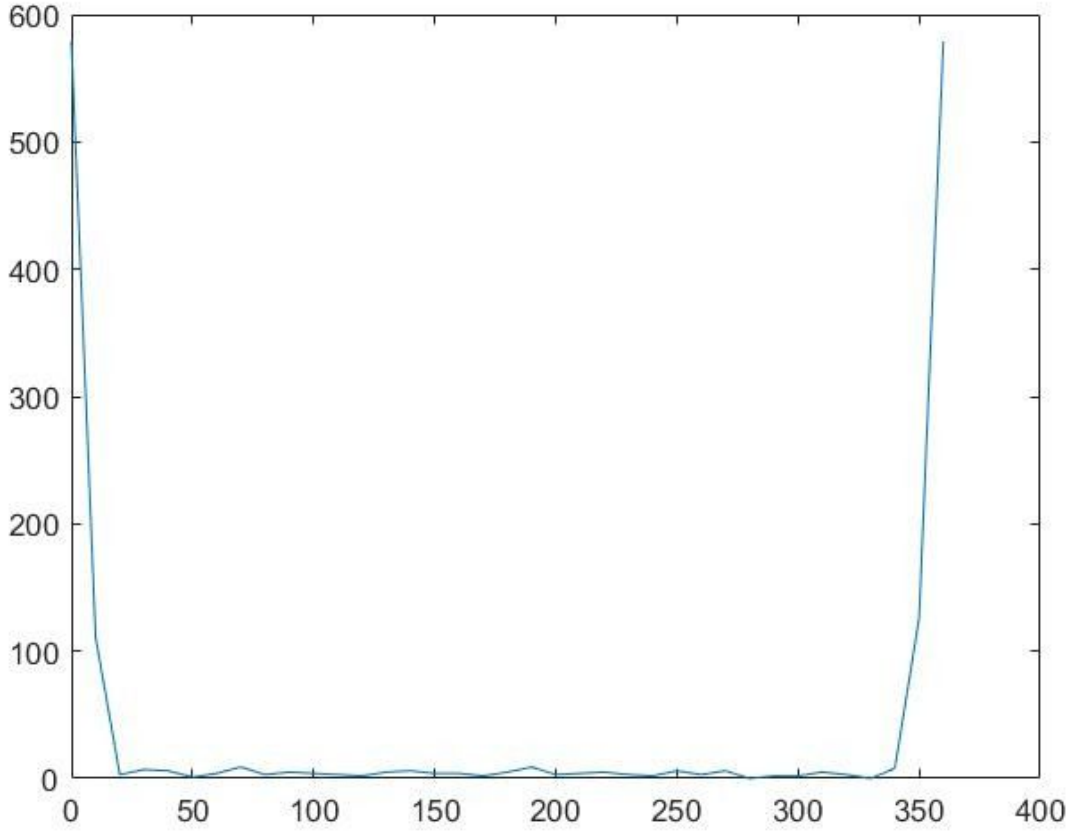
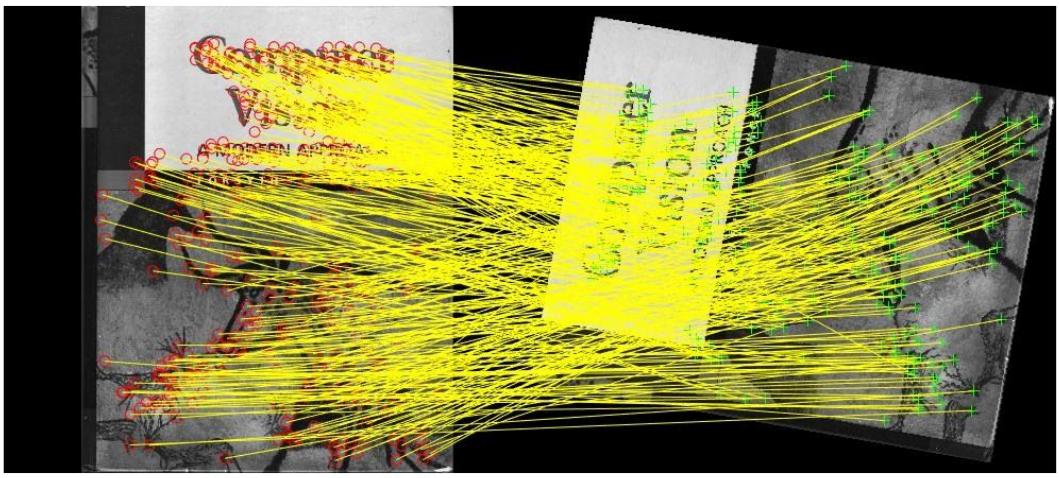
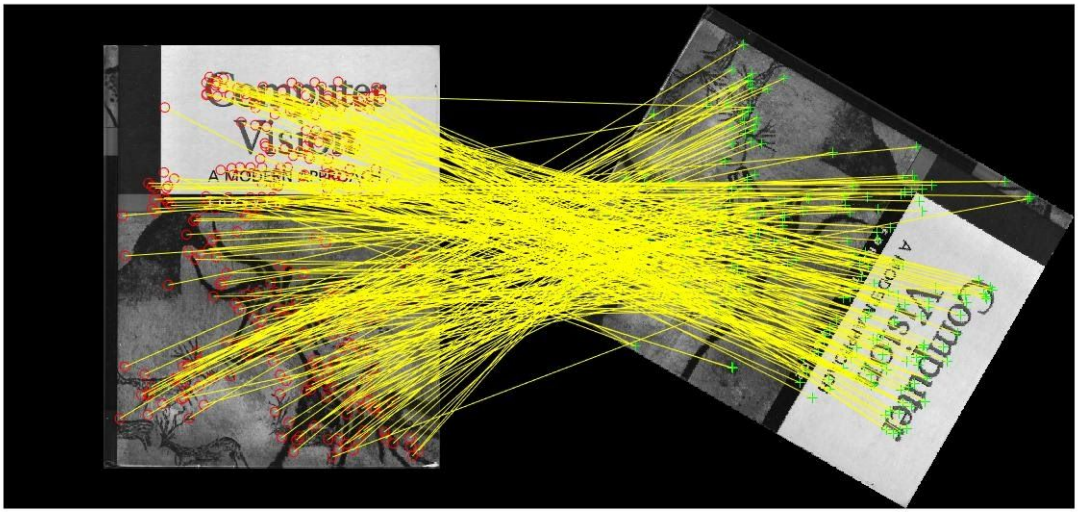




Here are the results with SURF descriptor:
I used three angles of 80, 250 and 300.
As you can see in the histogram, with rotation BRIEF descriptor gives better results.

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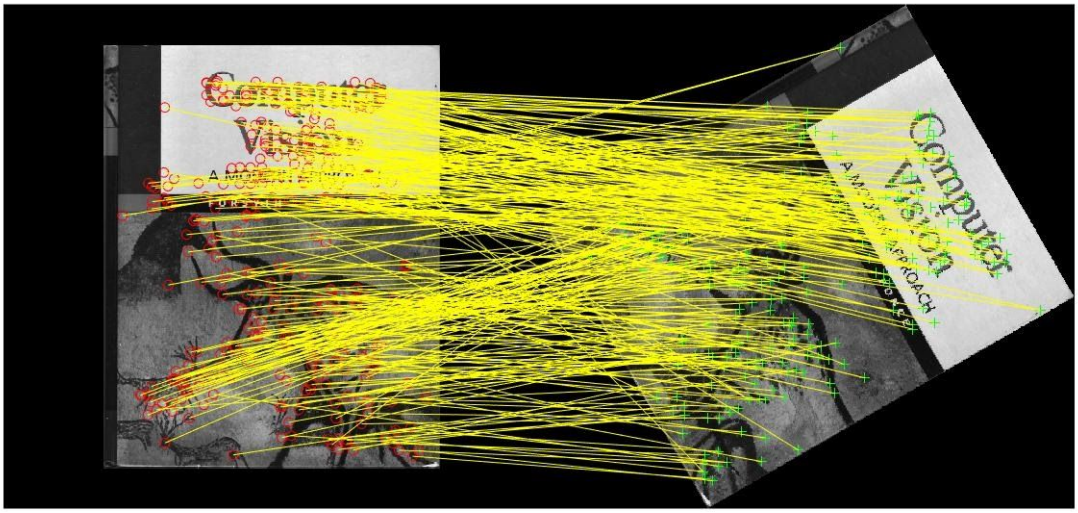

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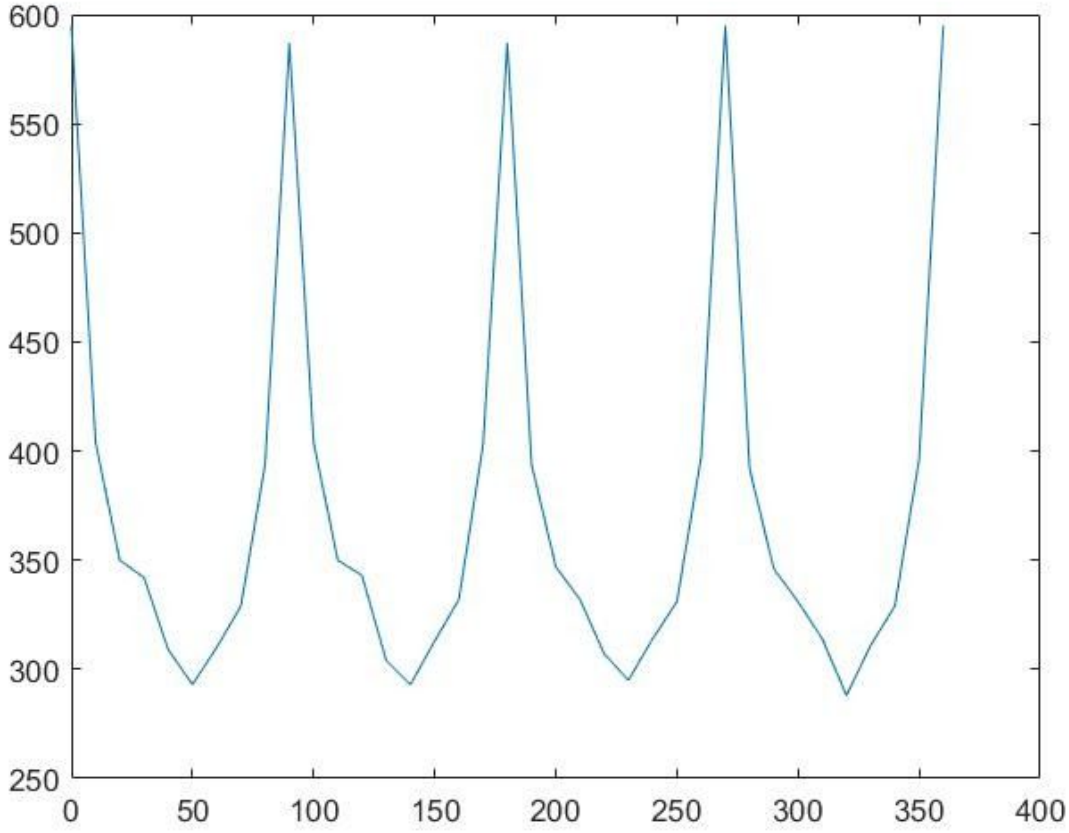
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50
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150
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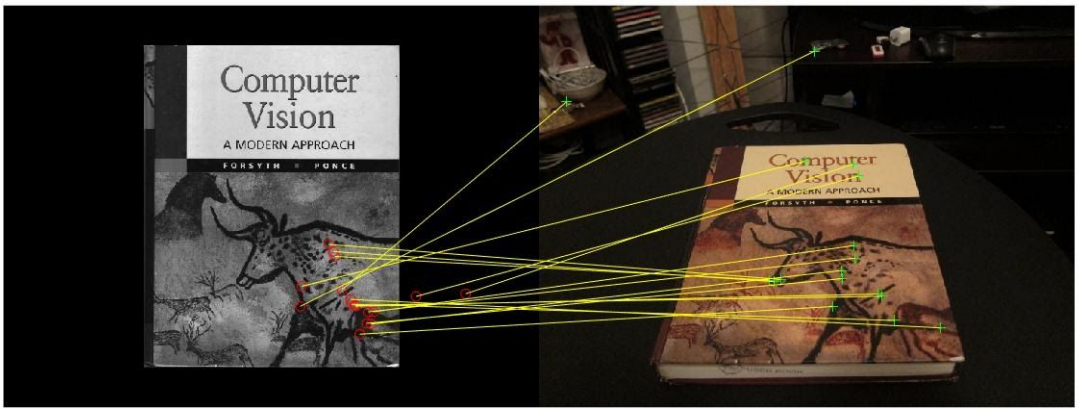
350
400

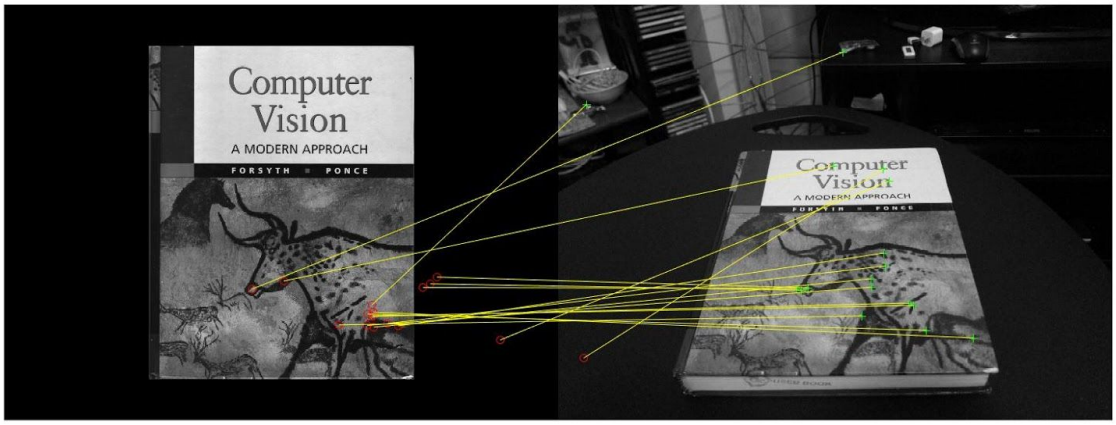
As you can see, the SURF descriptor can give better results with rotation, this is because SURF will find the dominant direction of the feature and rotate the sampling window to align with that angle but BRIEF does not care about the direction of features.

4.3. Homography Computation (3 pts)



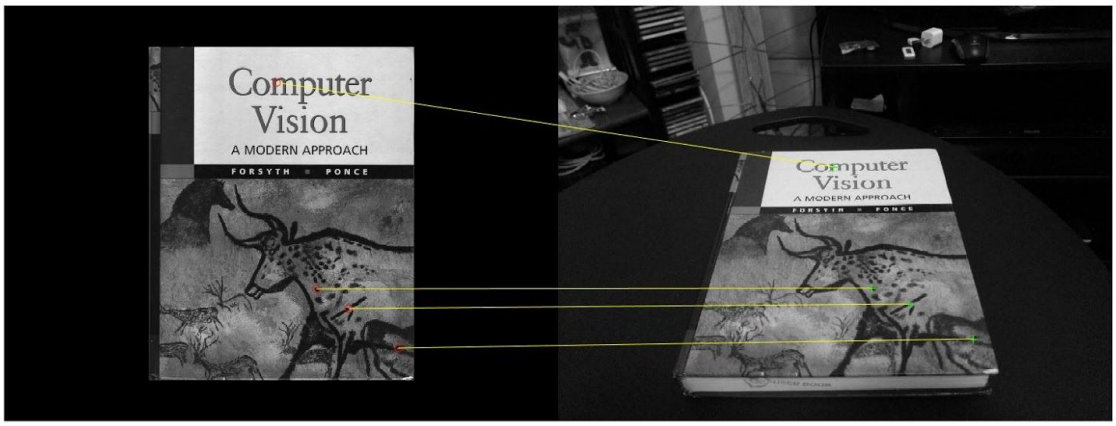
4.4. Homography Normalization (2 pts)

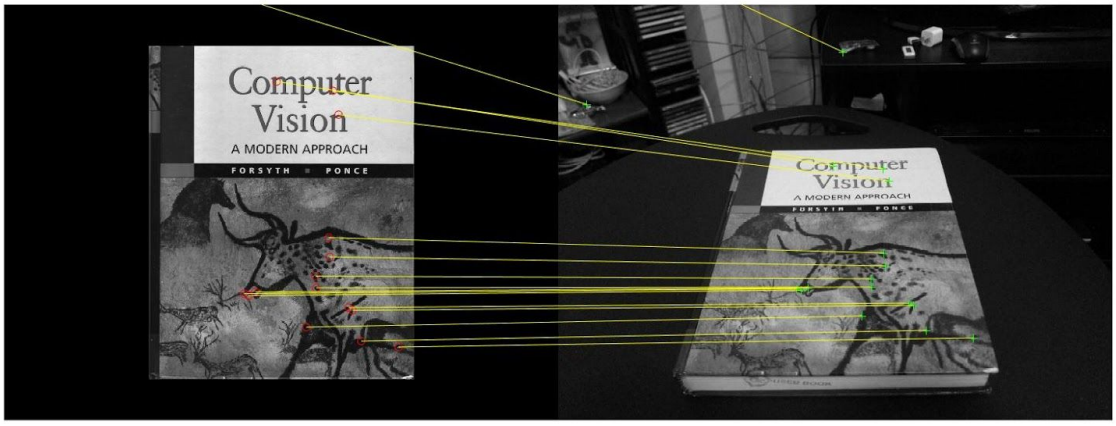
After doing the normalization the result will still not be matching all the points correctly:



4.5. RANSAC (2 pts)

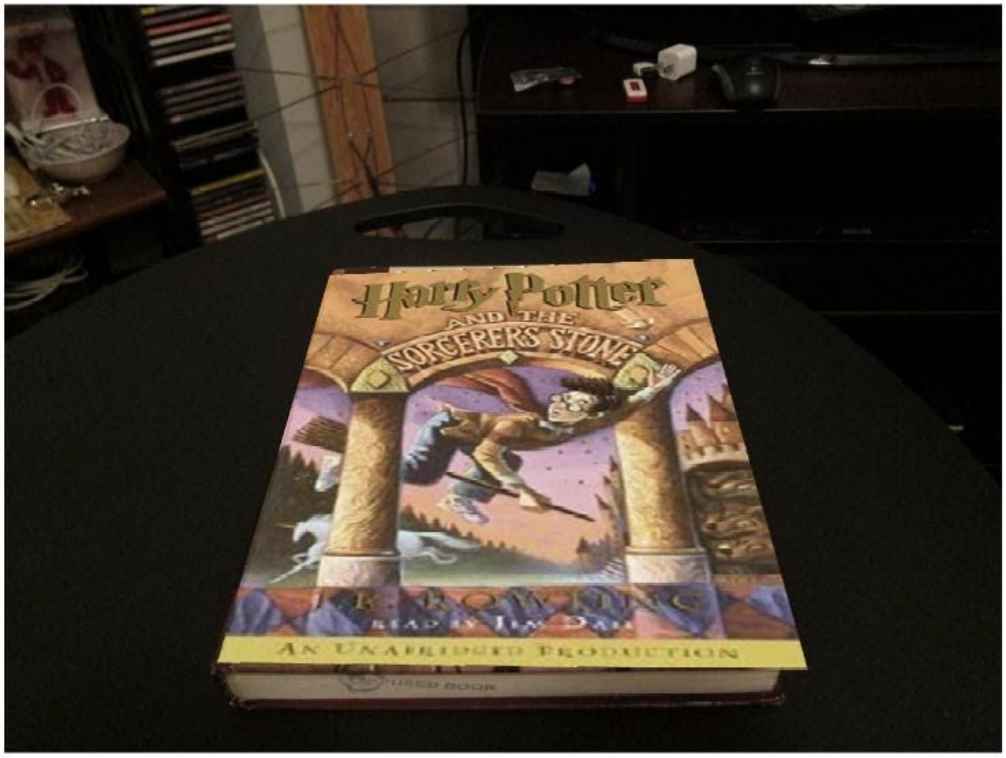
Here is the four points that produced the most number of inliers and all of the inliers:





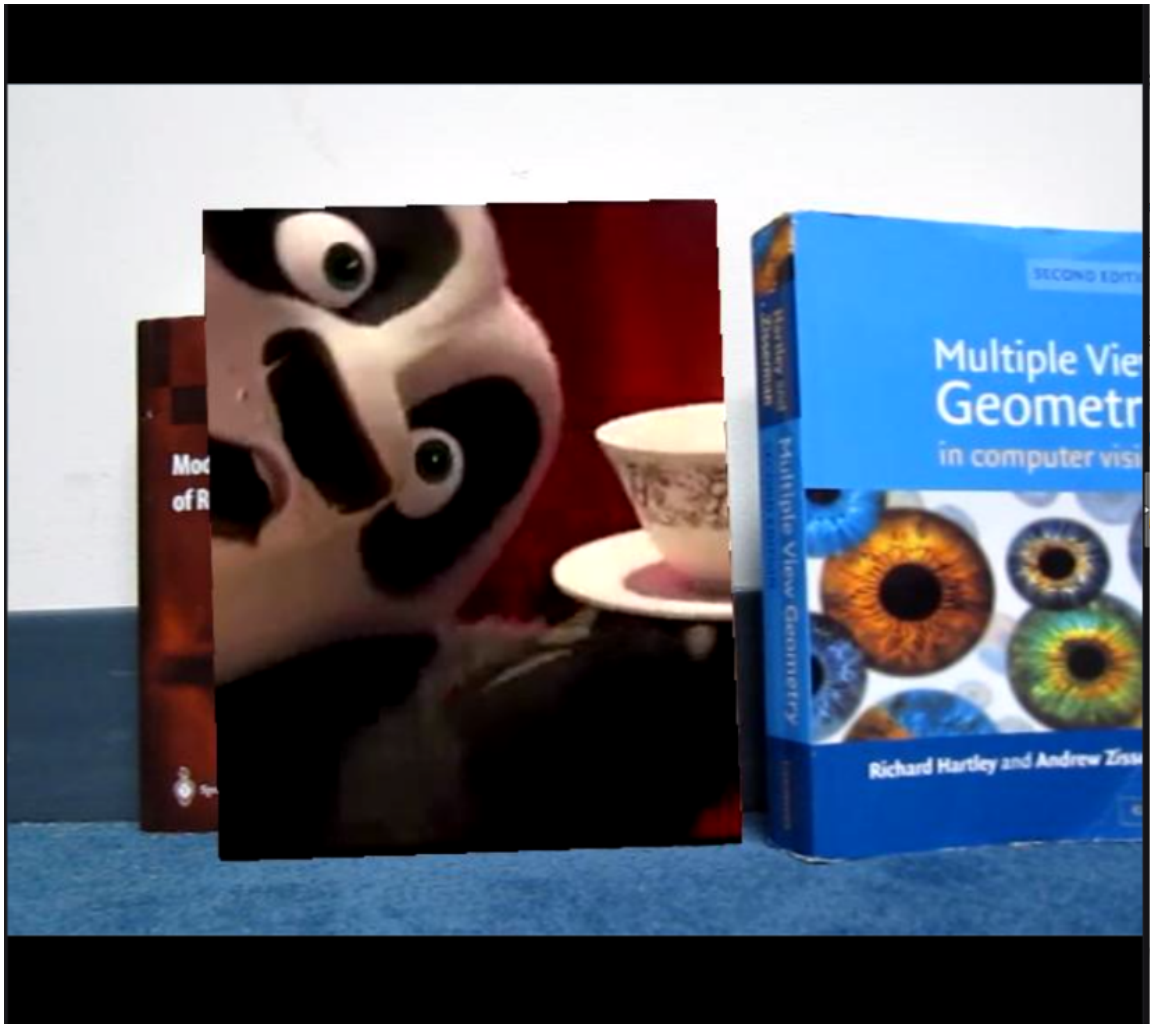
4.6. HarryPotterizing a Book (2 pts)

Here you can see the result of harry potterizing the book.



5. Creating your Augmented Reality application (2 pts)

I screenshotted two frames of my output video:
The whole video is in the results folder.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in computer visi
Multiple View Geometry
Richard Hartley and Andrew Zis


Multiple View Geometry