



Homography Estimation: Homography Computation

When you take a panaramic image with your camera, you end up with a sequence of images of the same scene taken from different perspectives. Each image has a slightly difference appearance but in many cases it is possible to transform them so they can be combined into a single image or panarama. In this Lab you will program automatic homography estimation between two images. Although this lab is not dependent on labs from previous weeks, it builds on concepts from Week 4.

In this lab you will (1) compute the homography between two images when correspondences are known, (2) estimate correspondences between two sets of Harris Corners using Nearest Neighbor and the ratio test and (3) use RANSAC to find the best homography estimate from the estimated correspondences from (2).

Your Function

 Save  Reset  MATLAB Documentation (<https://www.mathworks.com/help/>)

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50 function H = compute_homography(p1,p2)
51     % use SVD to solve for H as was done in the lecture
52     % note p1 is an 8 vector representing 4 points
```

Code to call your function

 Reset

```
1 buildingDir = fullfile(toolboxdir('vision'), 'visiondata', 'building');
2 buildingScene = imageDatastore(buildingDir);
3 I1 = readimage(buildingScene, 1);
4 I2 = readimage(buildingScene, 2);
5
6 p1 = [ 366.6972 106.9789
7       439.9366  84.4437
8       374.5845 331.2042
9       428.6690 326.6972 ];
10
11 p2 = [ 115.0000 120.0000
12       194.0000 107.0000
13       109.0000 351.0000
14       169.0000 346.0000 ];
15
16 figure()
17 imshow(I1);
18 hold on;
19 plot(p1(:,1),p1(:,2),'go')
20 hold off;
21
22 figure()
23 imshow(I2);
24 hold on;
25 plot(p2(:,1),p2(:,2),'go')
26 hold off;
27
28 H = compute_homography(p1,p2);
29 I = stitch(I1,I2,H);
30
31 figure()
32 imshow(I)
33
```

 Run Function



Previous Assessment: All Tests Passed

Submit



 Is the Homography estimate correct?