

Computer Vision

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Problem Set #3

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3: Projective Geometry

Report what warping technique you have used and comment on what led you to choosing this method.:

I chose to use inverse warping.

The primary reason for using inverse warping over forward warping was because of holes in the advert image once transformed to the brick wall. Forward warping maps points from the original image to the target directly, so in some cases (particularly when the advert gets larger) some points will not be filled in, revealing brick wall behind the superimposed image. This is eliminated with inverse warping: each pixel in the new image maps to some combination of points in the prior image (by using an interpolation method, in this case bi linear).

Additionally, inverse warping is similar computationally and came recommended by the lecture videos (see 3D-L2.12), so it was an easy decision to go that direction.

4: Markers in Video



ps3-4-a-1



ps3-4-a-2

4: Markers in Video (cont.)



ps3-4-a-3

4: Markers in Video (cont.)



ps3-4-a-4



ps3-4-a-5

4: Markers in Video (cont.)



ps3-4-a-6

4: Markers in Video



ps3-4-b-1



ps3-4-b-2

4: Markers in Video (cont.)



ps3-4-b-3

4: Markers in Video (cont.)



ps3-4-b-4



ps3-4-b-5

4: Markers in Video (cont.)



ps3-4-b-6

5: Markers in Video



ps3-5-b-4



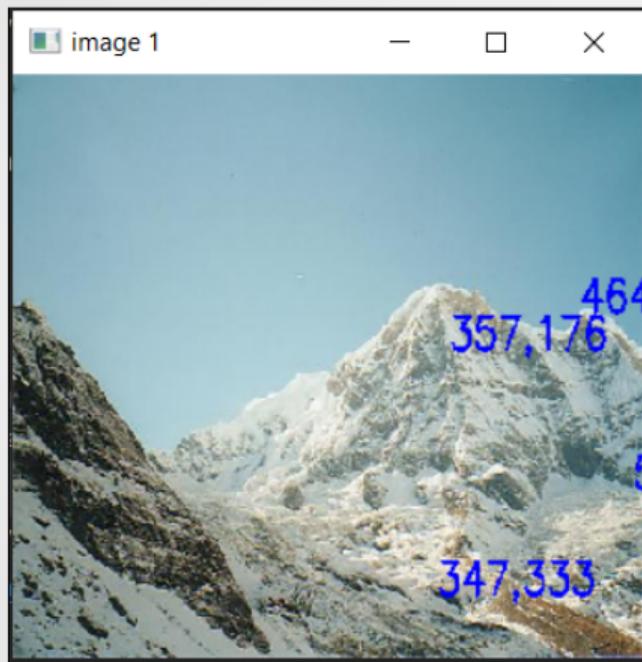
ps3-5-b-5

5: Markers in Video (cont.)

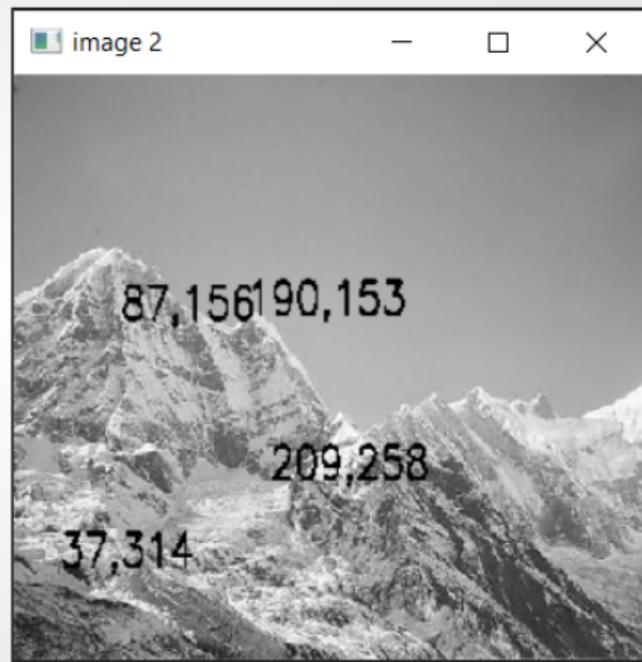


ps3-5-b-6

6: Manual Correspondence points



ps3-6-a-1



ps3-6-a-2

9: Image Stitching



ps3-9-1



ps3-9-2

9: Image Stitching

Comment on the quality difference between the two outputs and how it relates to the importance of choosing the correct correspondence points for the image:

Unfortunately, I was unable to complete the RANSAC algorithm, so I do not have a good comparison image.

However, in general, badly selected points can dramatically affect the stitching quality: if points are incorrectly and/or inconsistently mapped, it can 1) shift the homography so that the images do not look properly aligned, 2) rotate the image so the epipolar and horizon lines do not align properly, and 3) scale the image in a highly obvious manner.

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