

Assignment 2

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1 Work Done

Following is the pipeline or work flow carried out by me for image stitching:

1. Applied Harris corner detector
2. Marked the corresponding common corner points
3. Get the perspective transformation of source image w.r.t destination image
4. Stitch the destination image with perspective source image
5. Crop the stitched image into rectangular shape.

I have carried the experiment on two test image sets, refer the folder for other results. However, we shall discuss about one of the test sets here. For code you can also refer GitHub.

Figures at the end of the document, from figure 1 to figure 7, should be self explanatory in describing the flow.

2 Analysis

Couple of errors such as imperfections were encountered during this process.

Firstly, lets talk about the figure 8. This image was obtained using inaccurate and less number of common corner points. More the number common points, better are the results, (i.e) the transformation/homomgraphy matrix obtained will transform the source image close to the destination image coordinate system.

Secondly, for input images which have different lighting, there exist an unnatural look when we stitch the two. For example, the image in the figure 9 doesn't look natural. This is because of difference in lightning in the two.

The best you can do to eliminate this is to capture images with adequate lighting, another way to circumvent this issue is to use histogram equalization.

Figure 1: Destination Image



Figure 2: Source Image

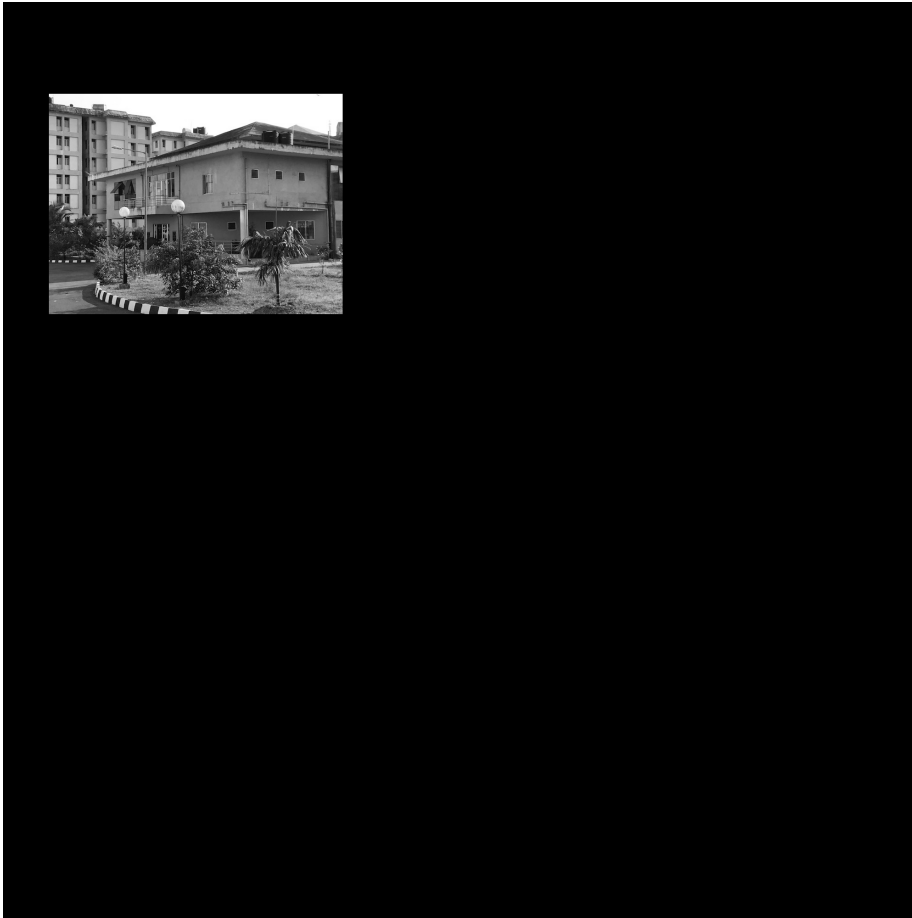


Figure 3: Harris corners



Corresponding common corner points in source image

Figure 4: Affine transformation



Getting the destination image onto a big empty canvas using affine transformation. Then perspective transformation of source image is done w.r.t this destination image.

Figure 5: Perspective Image



Figure 6: Stitched Image



Once we have the the perspective image, we just need to copy the points/pixel values in perspective image to affine destination image where the corresponding pixel values are non-zero.

Figure 7: Cropped Image



Figure 8: Imperfection in stitching



Figure 9: No proper lighting

