Computer Vision Assignment 2

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1 Image Stitching

In this homework, our aim was to stitch the images while implementing our custom homography function and correspondence points. There were 4 steps to achieve our goal.

1.1 Select Corresponding Points

I have defined a "def clicked(image, k)" function which I used plt.ginput inside. After I selected the corresponding points, I saved them with np.save to use them later, again.

I tried to select simmetrical points which are mostly in the sharp places of the images. I observed that my code works better if I choose corresponding points appropriately.

1.2 Homography Estimation

After I understood the main approach of Homography, it was not that hard to implement a homography estimation function. I used single value decomposition function of numpy in my homography function.

For inverse warping, I used reverse of the homography matrix.

1.3 Image Warping

I think, the hardest part of the homework was to understand the warping approach and the interpolation-warping relationship. I lost lots of time here. Now, I have a "def warp(image,homography)" function which i gave image and reversed homography matrix as parameters. I interpolated the warped image layer by layer (RGB) in my interpolation function.

1.4 Blending Images

In this subsection, I basically concatenated the base image and warped images.

2 Tasks

2.1 Paris Dataset

You can see the warped images and the blended result down below.

Figure 1: Paris A

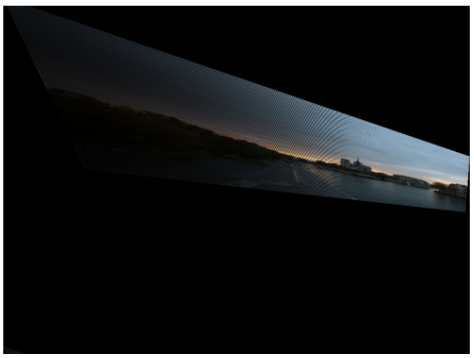

Figure 2: Warped Paris A

Figure 3: Paris C

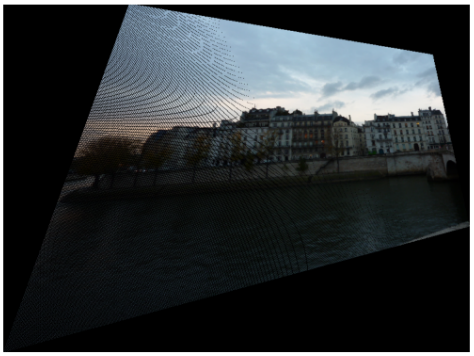

Figure 4: Warped Paris C

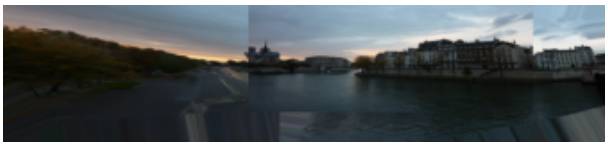

Figure 5: Blended Result

There is another successful example which I warped Paris B image according to Paris A image.

3 Choosing Bad Corresponding Points

While I was trying to warp A (to stitch it to the B), I choose some bad corresponding points. And here, you can see how useless the warped result of A is down below

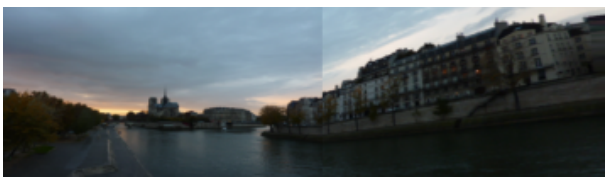

Figure 6: Paris A and Paris B

Figure 7: Warping Result with Bad Corresponding Points