

Comp Photography (Sp 2015)

HW 8

Panoramas

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Source Images

I took these photos from my car with raindrops on the windshield. I was curious if the raindrops would confuse the matching algorithms.



Image 1

Notice the house on the far left and a part of the tree on the right upper corner.



Image 2

This image is the middle. The left face of the house is no longer visible but the tree on the right is coming into view.



Image 3

This is the far right image. You can still see the end of the house and now the full tree on the right is visible.



Overwrite blending

This is stitching the 3 images with the default overwrite blending (second image just gets splatted on top of the warped image). If I cropped it based on common extents, the only seams would be the minor ones on the left.



Average blending

Average blending is the easiest to implement. By masking the warped region with 0, the shared region with 0.5, and the new image with 1.0, I just apply the (1-mask) and (mask) to the warped and new image and then add them together. However, the results are terrible. Ghosting and blurriness makes this image very poor quality.



Sigmoid blending

I created a horizontal mask following the sigmoid function. This does a great job at hiding the seam. I needed to crop the image because the memory required was too large to continue to do multiple images. This was a bit more challenging because the extents are a bit involved. And in my first attempt I tried to generalize the horizontal and vertical directions which gave poor results.



Pyramid Blending

Using the pyramid blending code from assignment 6 was relatively easy (especially once I had generated a sigmoid mask). The results for these images are hardly different than the sigmoid, but look at the following slide for a better comparison.



Sigmoid vs Pyramid

Blending the sample images demonstrates a noticeable improvement using pyramid over just sigmoid blending. Comparing the next two slides.

Pyramid



Sigmoid



Problems

I tried to use some images that I created when I first bought a camera with panorama in 2008. Here are the source images.



Confused Warp

While the trees and flowers should be easy to identify, I think the grass is causing spurious matches (or perhaps too few). I tried changing number of matches, but this did not improve the situation. All other stitching seemed to do fine with 40 matches. Unfortunately I did not have time to investigate further.



Results

I was disappointed with the grassy photographs, and there are many performance issues that would be interesting to improve.

But I am very pleased that the other panoramas worked well. I particularly liked seeing how the pyramids improved quality.