

HW2: Image Adjustments and Artistic Filters

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Exercise 1: Color to grayscale

Method 3 (perceptual luminance-preserving method) was my favorite because (a) it was really clear to me what was going on "behind the scenes" and I had flexibility to alter the weights and (b) it achieved a more visually meaningful resultant image than the average method because of its attunement to human perception.

Exercise 2: Sepia toning

The results of this exercise seemed satisfactory in achieving the desired 'sepia toning' effect.

Exercise 3: Color balancing

It was surprising to see how well this method worked for adjusting the white balance of the selected photographs. Although it did not prove to be a perfect method, it appeared to do a fair job of balancing `paris.jpg` because there were a lot of white and off-white colors present in the photo.

Exercise 4: Contrast adjustment

In all cases, I preferred my manual adjustments to the photo. That is because I manually adjusted the images to look natural in two ways the automatic equalization method didn't. Because I tried not to 'crush' the colors in the image to any noticeable extent, much less true white and true black appeared in my image, which is a more natural look—the natural world seldom appears in such high contrast and another benefit is that the less dramatic shift resulted in less severe 'stretching' of the histogram. Since we are 'regaining lost information' in a sense by stretching the histogram, we get a more noticeably quantized image that is less smooth; that is, the 'in-betweens' or gaps in the resulting histogram were less noticeable. On that note, it would be a good algorithm to stretch the histogram taking into consideration the gradient of the image, that way, the

adjusted color could be interpolated rather than remaining in discrete chunks. Another note on this assignment, the strongest competitor versus my manual adjustments was the adjustment on `nicaragua.jpg` because the more-intense adjustment made the upper-half of the image (*i.e.* the sky and clouds) and portions where the sand and water meet more distinct. It would be ideal to use my manual adjustment for the lower half and the automatic version for the upper half.

Exercise 5: Artistic filters

I wrote three filters for this assignment: (1) a comic book/watercolor style filter which contains black outlines (to simulate ink) and washed-out, blurred colors (to simulate watercolor), (2) a neon light style filter that displays bright and vivid colors (high value, high saturation) over a blackened background to simulate the idea of a neon sign, and (3) an unexciting example of vignetting because it didn't seem to complement my artistic filters well and it was required.