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CS4495 - Spring 2015 - OMS
Introduction to Computer Vision
Problem Set 0
Georgia Tech

ps0-1-a-1.png

ps0-1-a-2.png

ps0-2-a-1.png

ps0-2-b-1.png

ps0-2-c-1.png

Question 2.c: Which looks more like what you'd expect a monochrome image to look like? Would you expect a computer vision algorithm to work on one better than the other?

The green channel image looks a bit more like what I would expect for mono-chrome. The red channel image washes out the faces and the edges of the roots are more distinct. For things like edge-detection I think the red channel image would work better. But for facial recognition the green channel image would probably work better.

ps0-3-a-1.png

Question 4.a: What is the min and max of the pixel values of img1_green? What is the mean? What is the standard deviation? And how did you compute these?

min: 0
max: 255
mean: 96.8457890396
stddev: 62.6921117289

Code:

```
shape = img1_green.shape[:2]
flat = img1_green.reshape(shape[0] * shape[1], 1)
mean = flat.mean()
stddev = numpy.std(flat)
print "min: {}".format(flat.min())
print "max: {}".format(flat.max())
print "mean: {}".format(mean)
print "stddev: {}".format(stddev)
```

ps0-4-b-1.png

ps0-4-c-1.png

ps0-4-d-1.png

Question 4.d: What do negative pixel values mean?

Negative pixels generally get clamped to 0 (no color). In this case, negative pixels are where the intensity is stronger in the offset image than the original.

ps0-5-a-1.png

Question 5.a: What is the value of sigma you had to use?

I tested values 1, 2, 3, 5, 8, 13, 21, 34 (Fibonacci series) until I could perceive the noise (which was 21). For simplicity I rounded down to use sigma of 20.

ps0-5-b-1.png

Question 5.b: Which looks better? Why?

I am surprised how much better 5.b (blue noise) looks than 5.a (green noise). In fact, the blue noise is almost imperceptible (you can see it if you look really closely at the blue shorts). I have 2 theories of why blue noise looks better:

1. Our eyes (or maybe just mine) have a harder time distinguishing shades of blue.
2. Displays (or maybe just my display) do not distinguish shades of blue as clearly as shades of green.