CS 6476 Computer Vision – Spring 2019

Problem Set 0 – Images as Functions (really arrays or matrices of numbers)

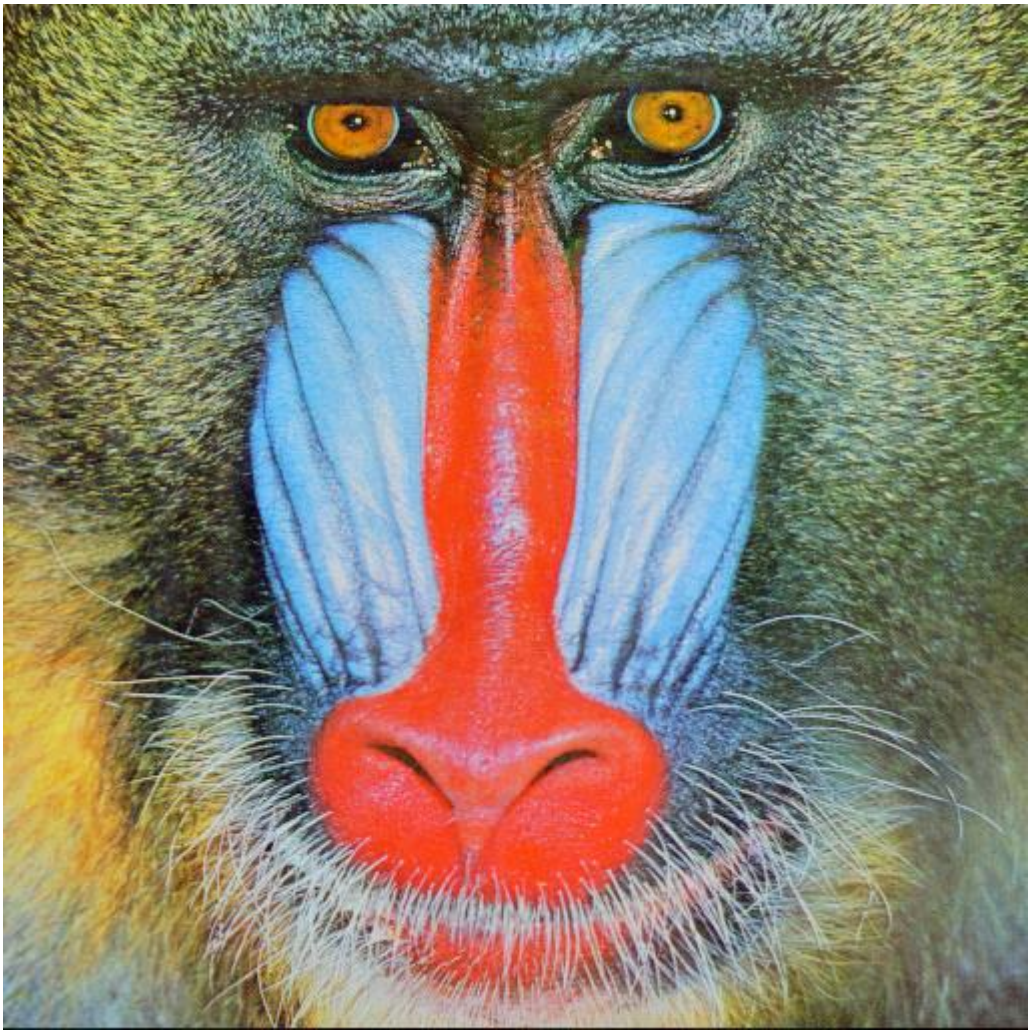

Figure 1 ps0-1-a-1

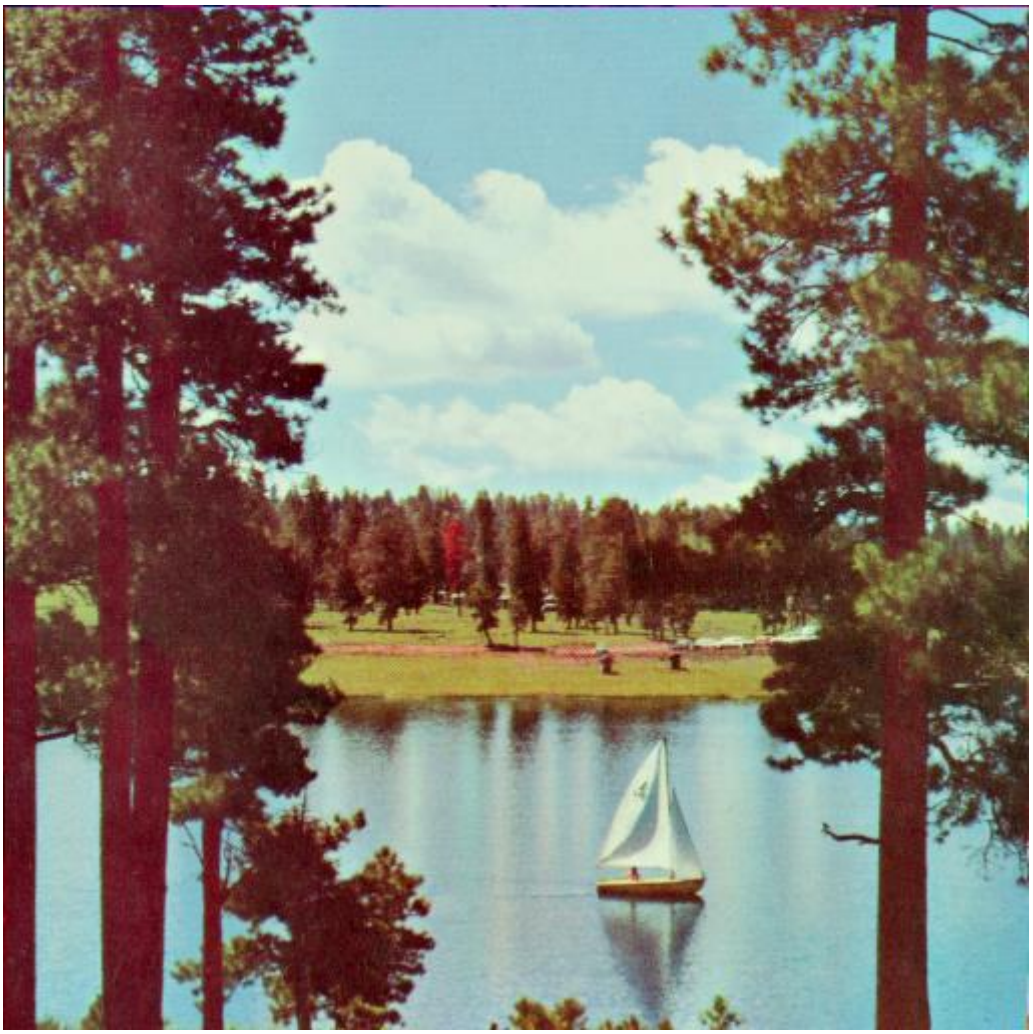

Figure 2 ps0-1-a-2

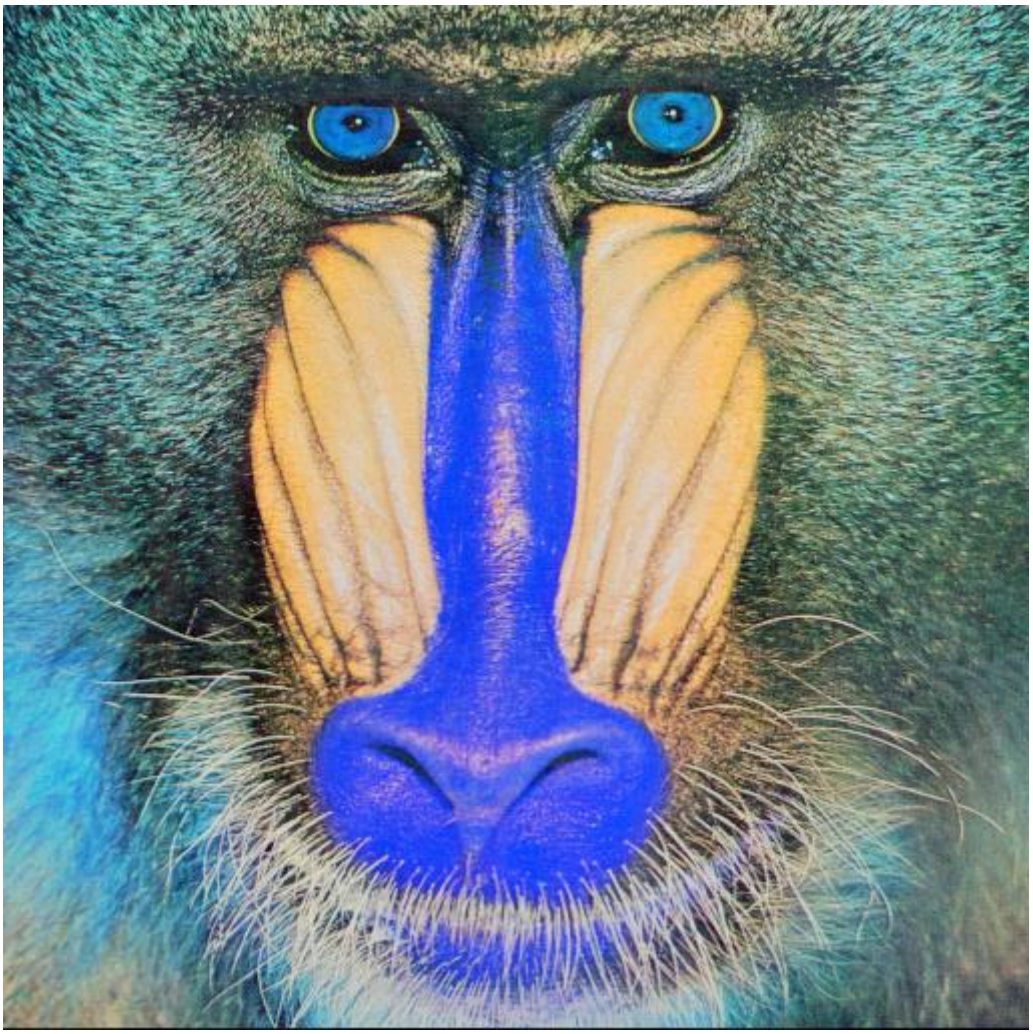

Figure 3 ps0-2-a-1

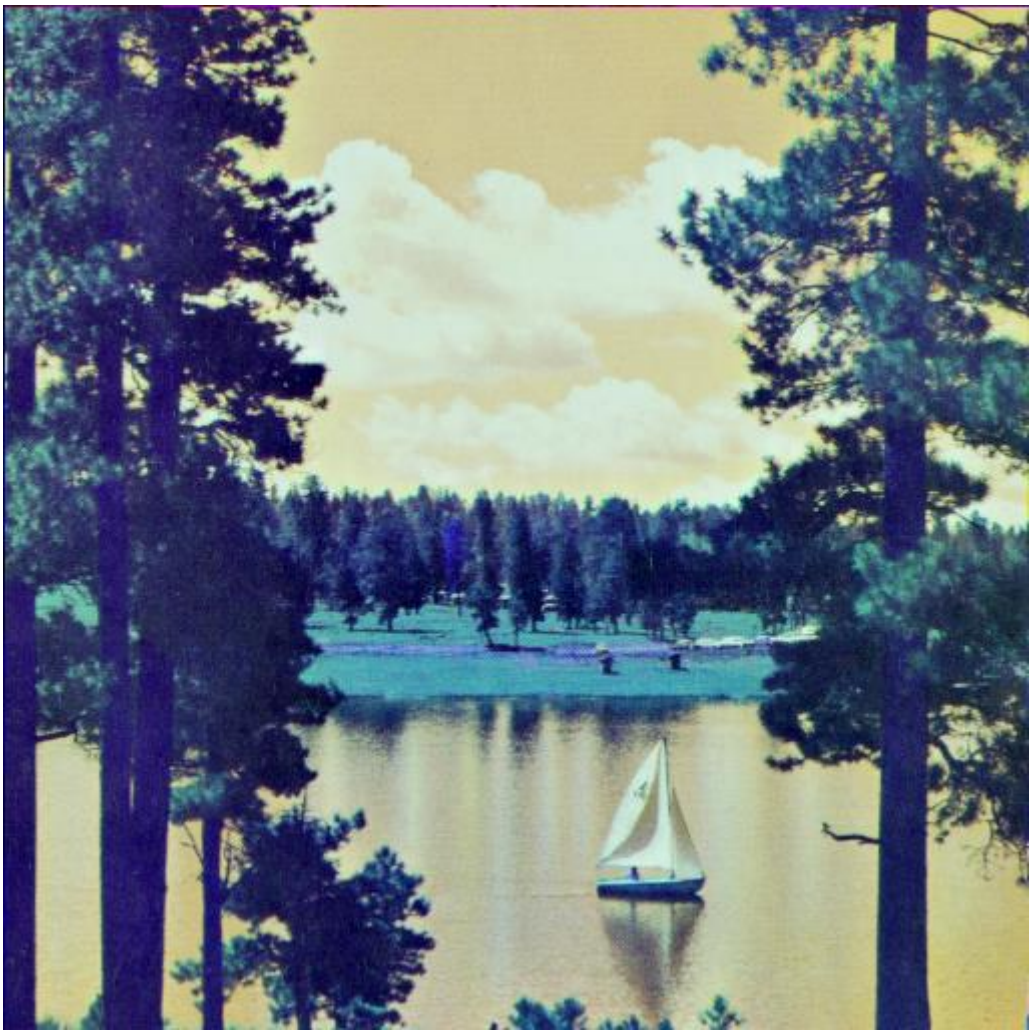

Figure 4 ps0-2-a-2

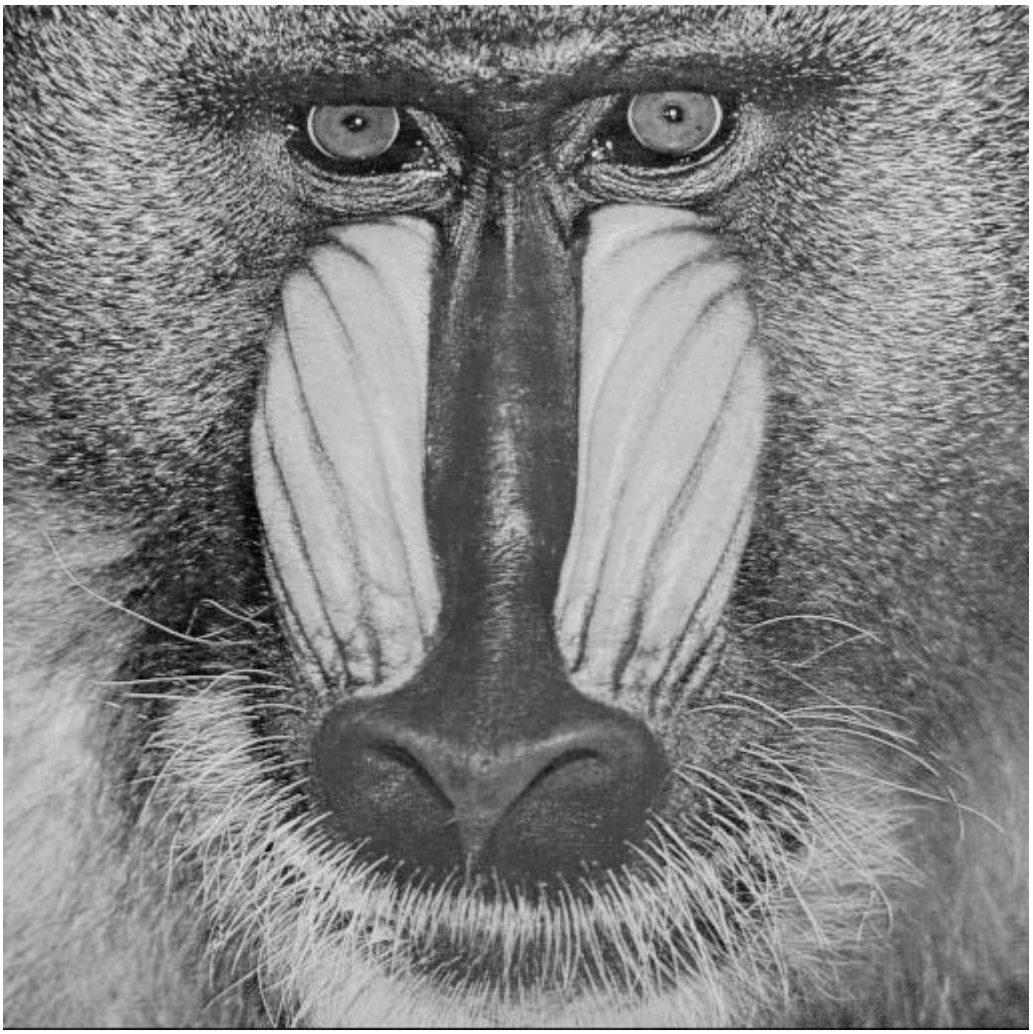

Figure 5 ps0-2-b-1

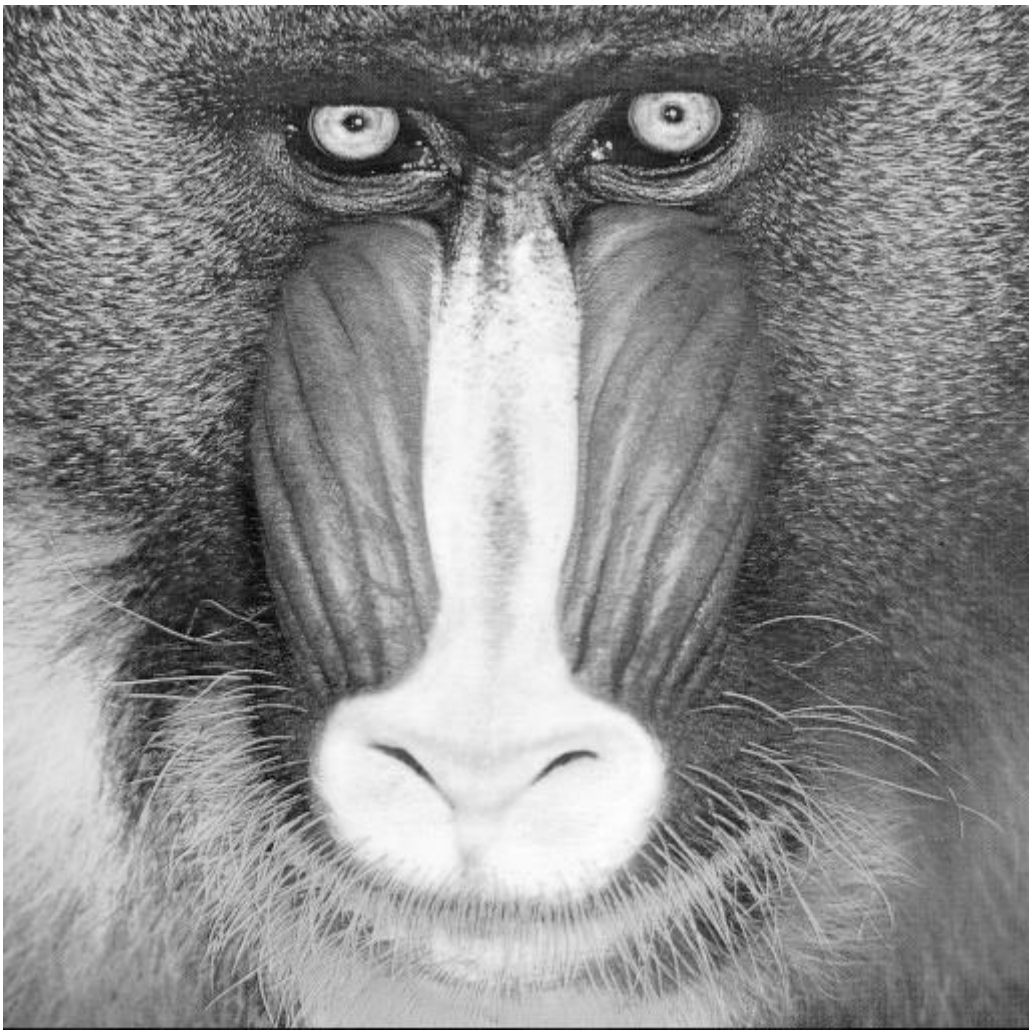

Figure 6 ps0-2-c-1

PS0-2-d-question :

The s0-2-b-1 image looks more like what I'd expect a monochrome image to look like because the nose of the baboon is purely red. Therefore, it appears as completely white on the ps0-2-c-1 picture, which modifies greatly the informations carried by the original picture.

Figure 7 ps0-3-a-1

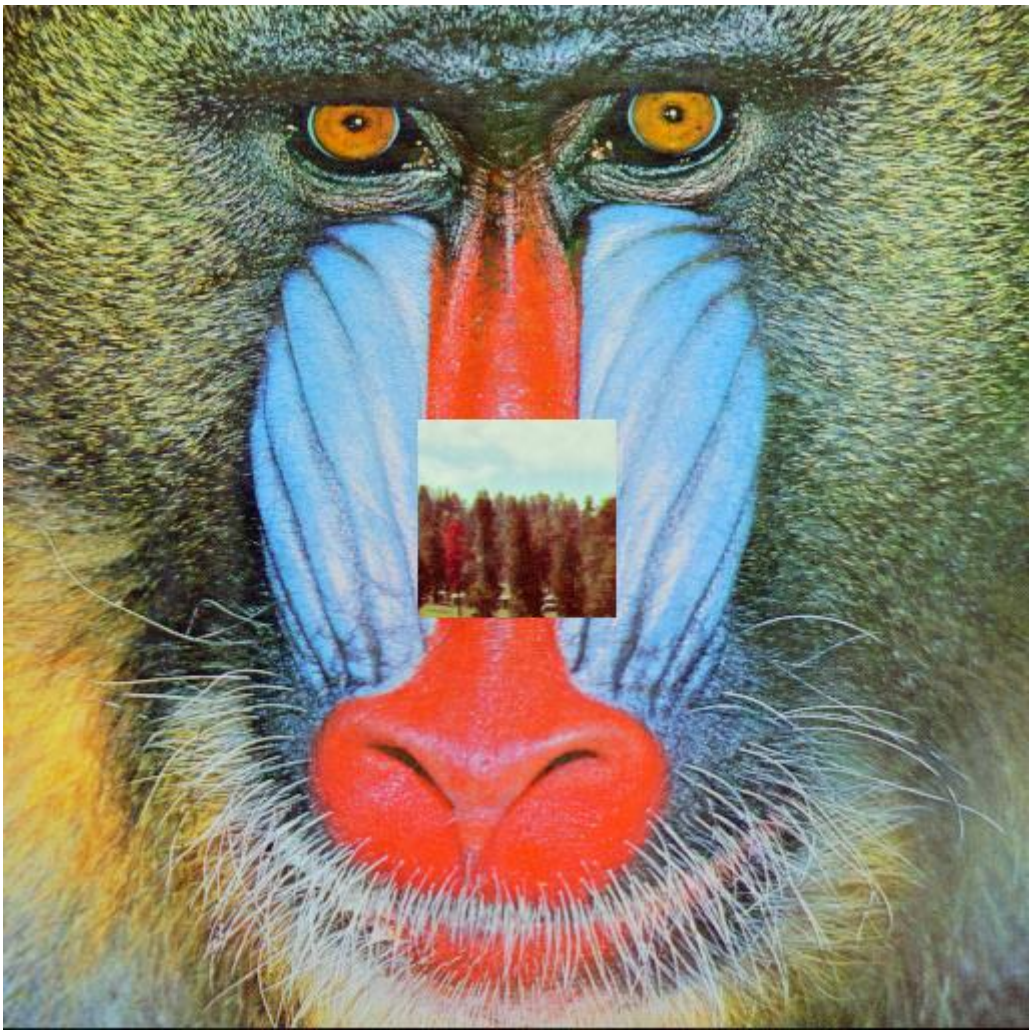

Figure 8 ps0-3-a-2

PS0-4-a:

```
max of the pixel values of M1g is  236
min of the pixel values of M1g is  0
mean of the pixel values of M1g is  128.8587760925293
standard deviation of the pixel values of M1g is  47.77058608994713
```

I compute these using numpy functions, which might use SSE registers and parallel computing to reduce the complexity of the computation. However, if we use simple procedural algorithms, the complexity of each computation is $(w \times h)$ where w is the width of the image and h the height of the image.

Figure 9 ps0-4-b-1

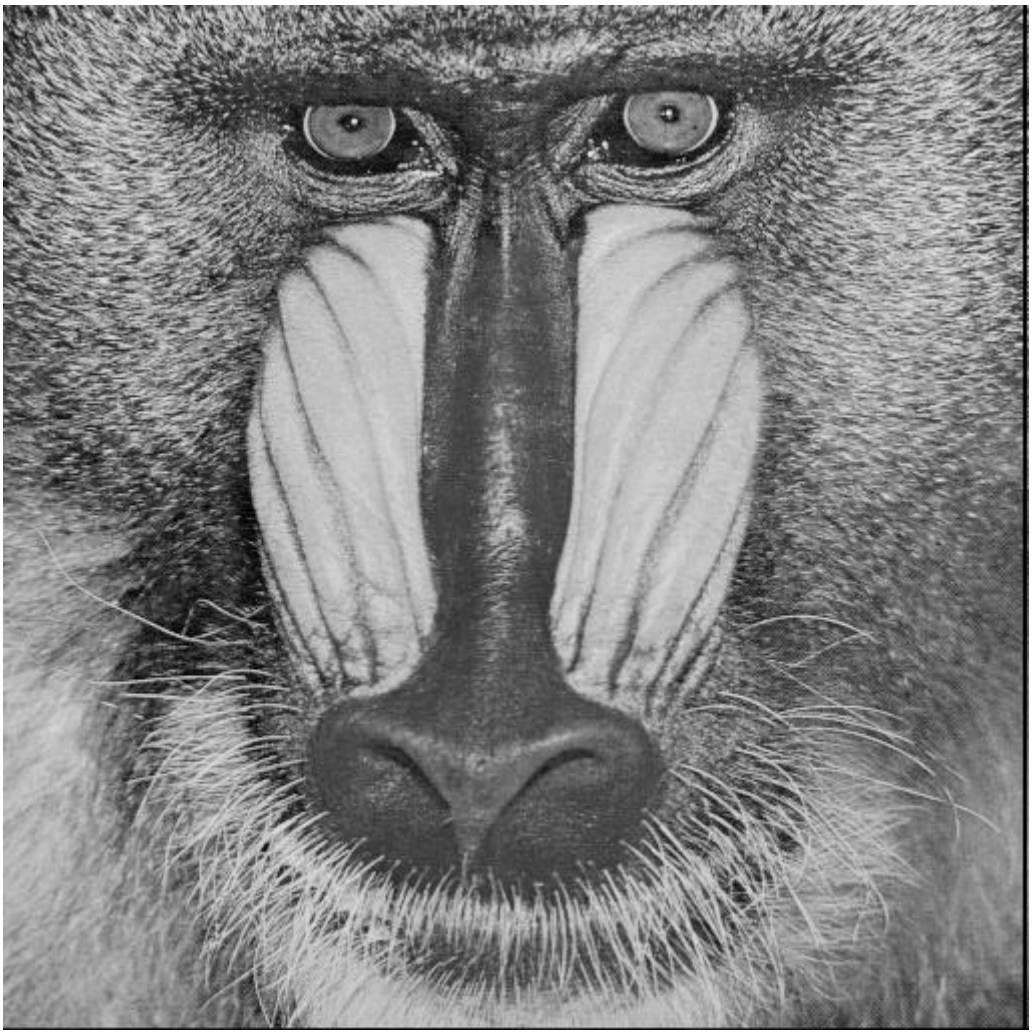

Figure 10 ps0-4-c-1

PS0-4-d:

Pixels intensity lies between 0 and 255 because they are stored in 8 bits unsigned integer variables. Therefore, a negative intensity value would not have any sense for an image.

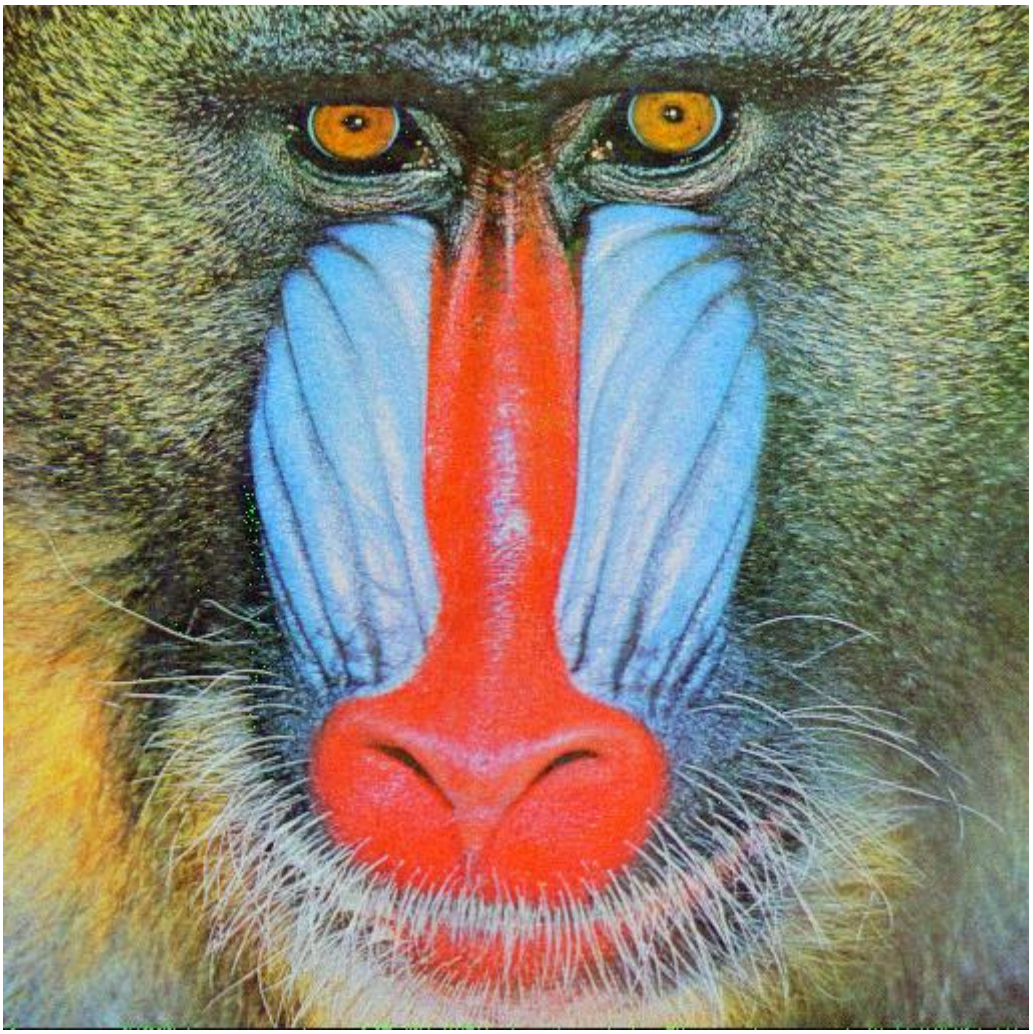

Figure 11 ps0-5-a-1

Sigma is the standard deviation of the normal distribution used to generate the noise for each pixel.

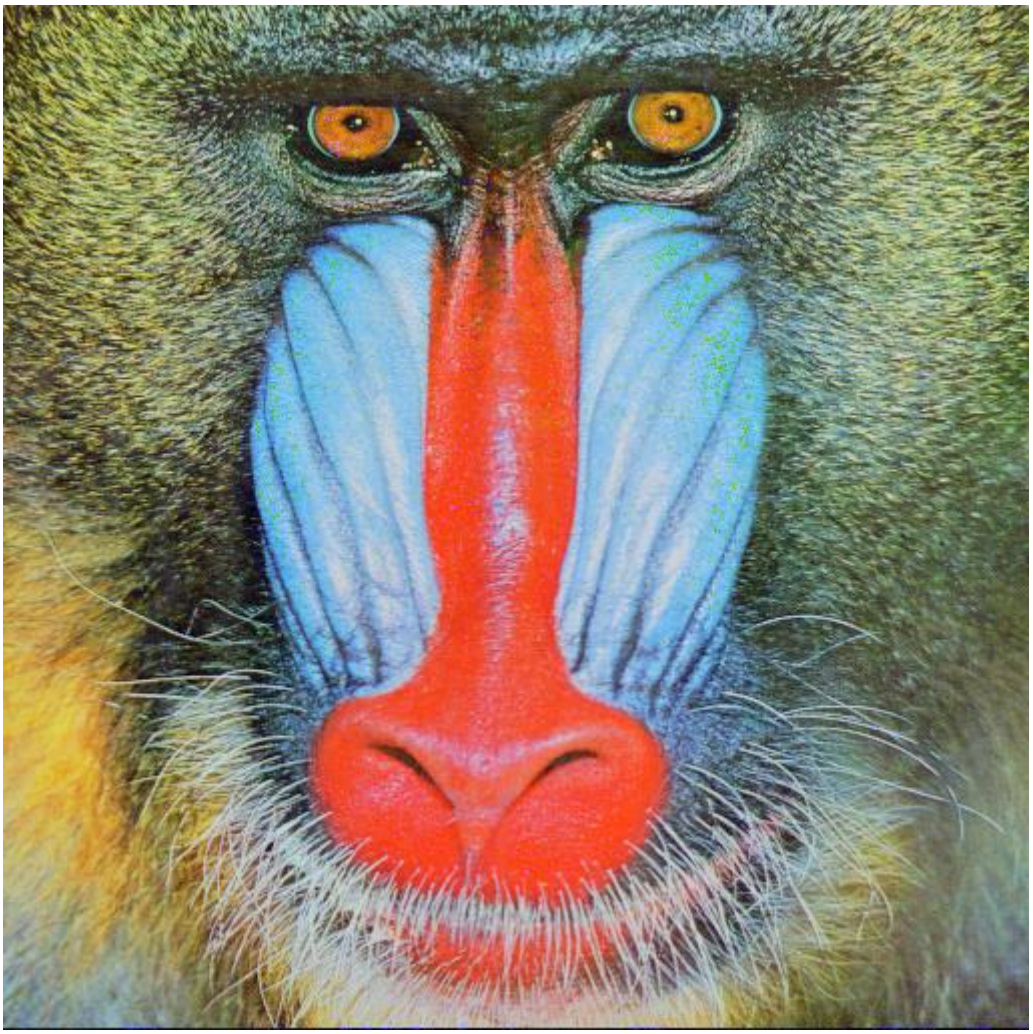

Figure 12 ps0-5-b-1

The ps0-5-b image looks better.Indeed, gaussian noise seems to have less effect on the blue channel