Equalize

October 26, 2018

Some standard libraries for image manipulation using matrix methods.

```
In [1]: import numpy as np
        import matplotlib.pylab as pl
        import scipy
        import scipy.misc as misc
```

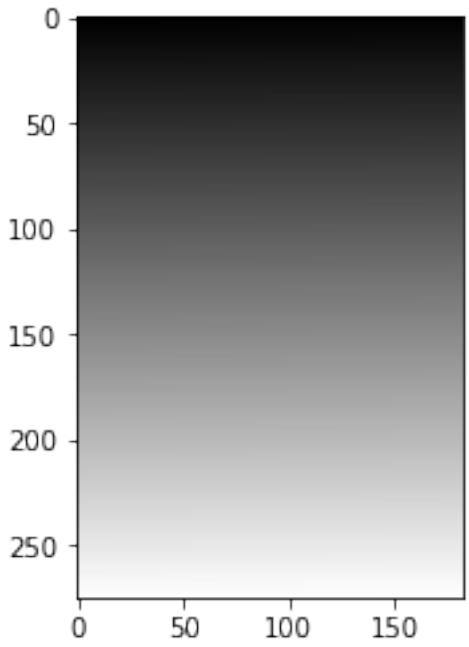
```
In [2]: orig=misc.imread('baby.jpg')
        print orig.dtype,orig.shape
```

```
uint8 (275, 183, 3)
```

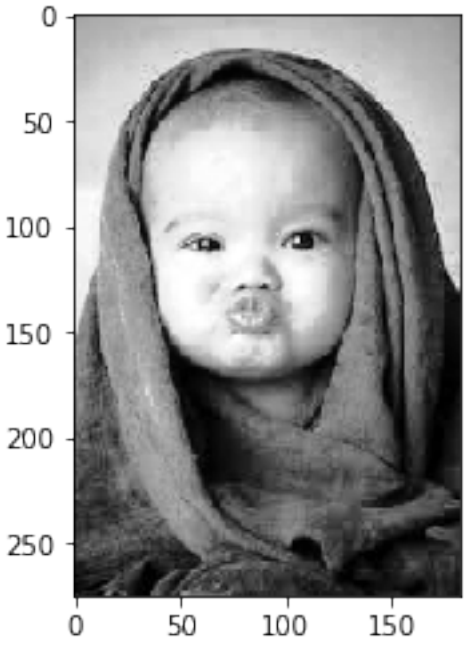
```
In [3]: def grayscale(size):
            def myiter(n):
                j=0
                r=n%256
                q=n//256
                for i in range(127):
                    for _ in range(q):
                        yield i
                for _ in range(q+r):
                    yield 127
                for i in range(128,256):
                    for _ in range(q):
                        yield i
            return np.fromiter(myiter(size),dtype='uint8')
```

```
In [4]: flat=grayscale(orig.shape[0]*orig.shape[1])
```

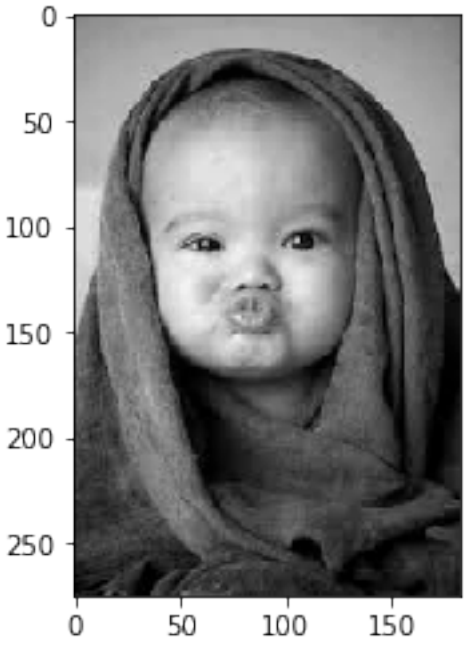
```
In [5]: pl.imshow(np.reshape(flat,orig.shape[:2]),cmap='gray')
        pl.show()
```




```
In [6]: def gray(img):
            new=np.float64(img[:,:,0])
            new+=np.float64(img[:,:,1])
            new+=np.float64(img[:,:,2])
            new=new/3
            new=np.uint8(new)
            return new

In [7]: lin=np.reshape(gray(orig)[:,:],orig.shape[0]*orig.shape[1])

In [8]: perm=np.argsort(lin)

In [9]: reverse=np.argsort(perm)

In [10]: alt=np.reshape(flat[reverse],orig.shape[:2])

In [11]: pl.imshow(alt,cmap='gray')
         pl.show()
```



In [12]:
```
pl.imshow(gray(orig),cmap='gray')
pl.show()
```



In [ ]: