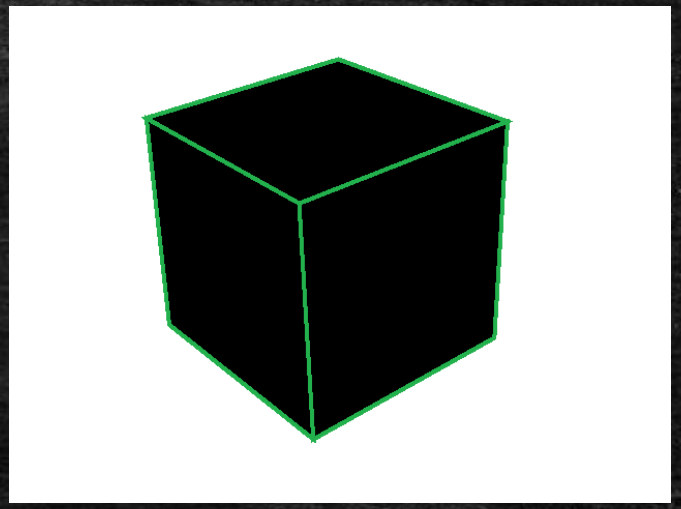
Assignment 01

Noah Sherry

Input Images



Filters - A

- Write a greyscale filter using the 20%/70%/10% model.
- Code:

```
def greyscale(img):
        img = img *1
        img = img[:,:,0]*0.2+img[:,:,1]*.7+img[:,:,2]*0.1
        img = img[:,:,None]
        img = np.uint8(img)
        return img
```

Filters - B

- Write a black/white filter with a threshold factor.
- Code:

```
def blackWhite(img, threshold=128):
        img = greyscale(img)
        img[img<threshold] = 0
        img[img>threshold] = 255
        return np.uint8(img)
```

Filters - C

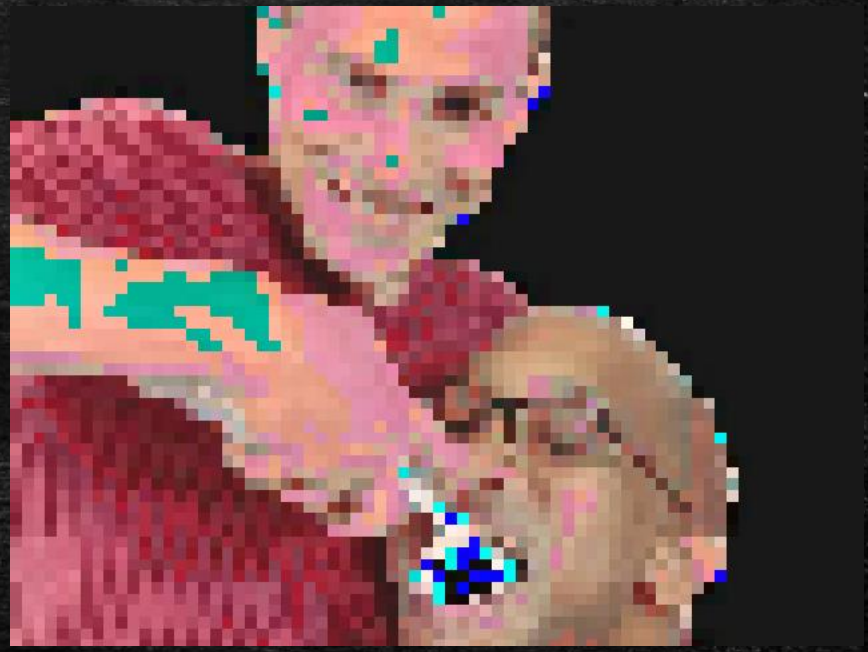
- Write a desaturate filter with a percentage factor.
- Code:

```
def desaturate(img, percent=1):
        img = greyscale(img)*percent+img*(1-percent)
        return np.uint8(img)
```

Filters - D

- Write a contrast filter.
- Code:

```
def contrast(img,factor=1):
        img[:,:,:]=((img-128)*factor)+128
        return img
```



Transformations - A

- Develop a mirror Matrix
- Matrix:

[1,0,0]

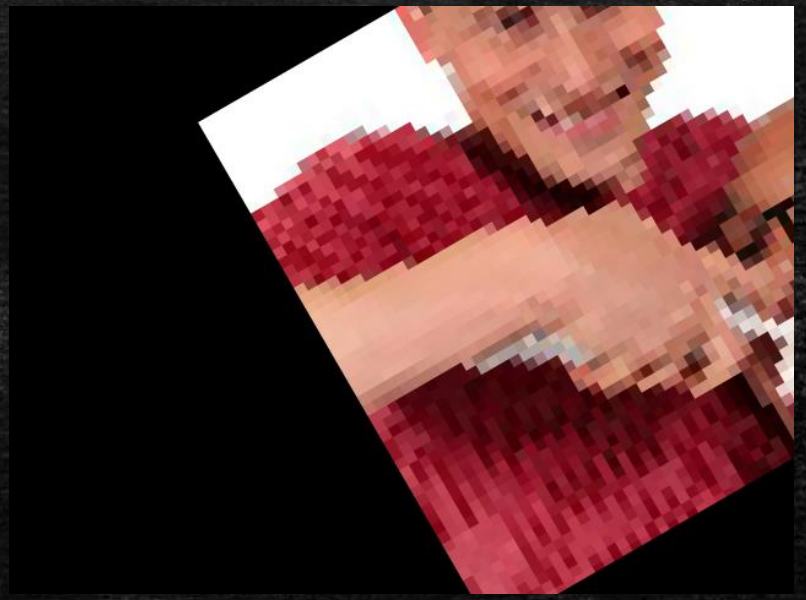
[0,-1,480]

[0,0,1]

Transformations - B

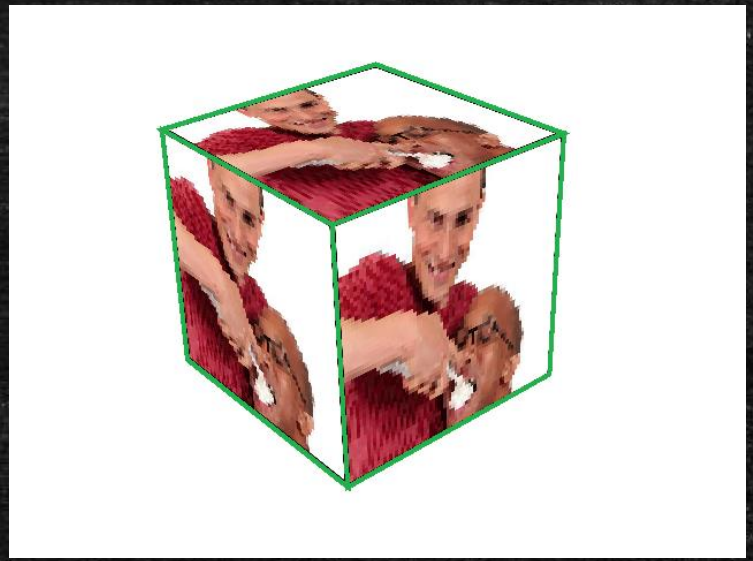
- Develop a rotation transformation
- Matrices:

```
[[  0.86602539   0.5        154.25622559]
 [ -0.5          0.86602539  94.69219971]
 [  0.           0.          1.        ]]
```



Transformations - C

- Perspective transform images on a cube.



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