Homework 7 Problem 2

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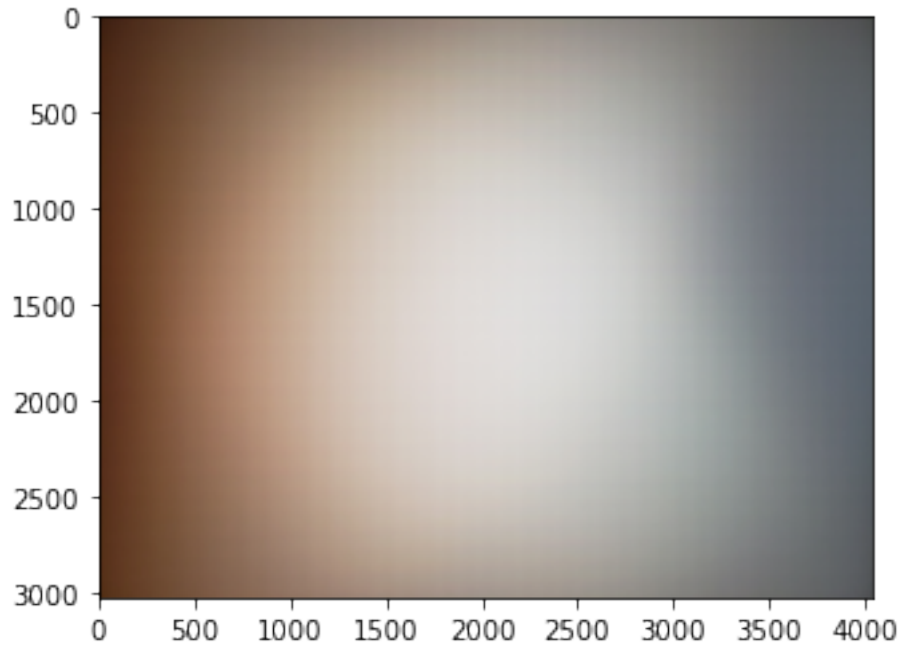
First, our import statements.

```
import matplotlib.pyplot as plt
import matplotlib.image as mping
import numpy as np
from PIL import Image, ImageOps
```

Next, lets read in a `.jpg` picture that we want to investigate.

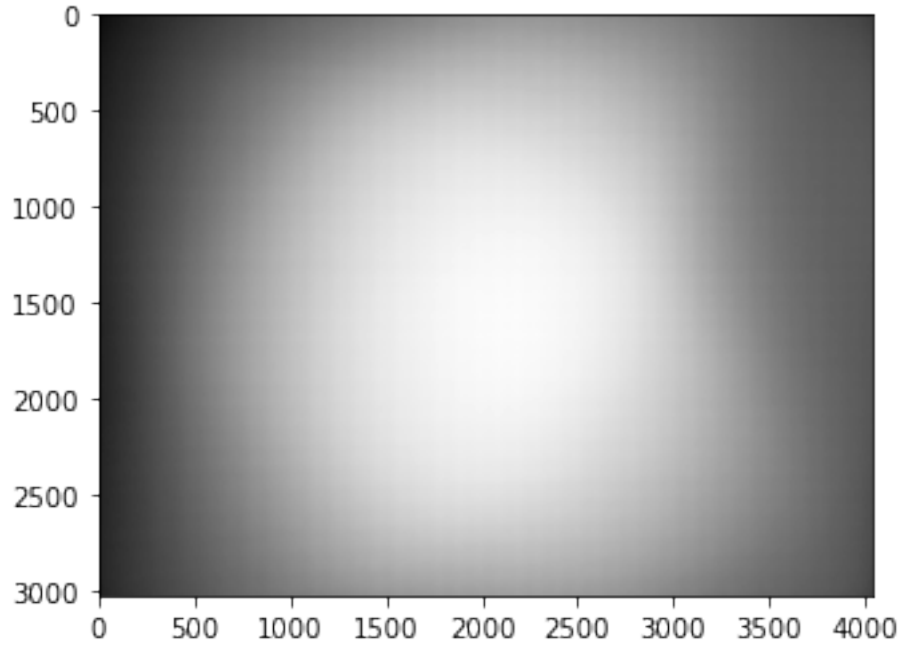
```
image = mping.imread("pattern.jpg")
imgplot = plt.imshow(image)
plt.show()
```



If you look closely, you can see a white grid pattern. Let's try to remove this. First, let's put it to a greyscale to we dont have to worry about the color data.

```
img = np.array(ImageOps.grayscale(Image.open('pattern.jpg')))
plt.imshow(img, "gray")
```

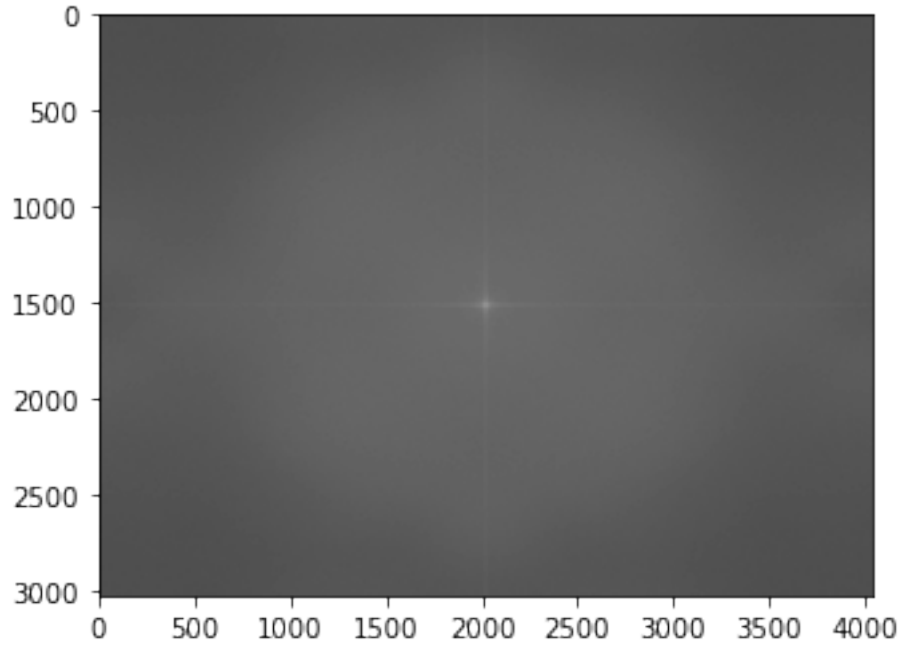
```
<matplotlib.image.AxesImage at 0x7f0187e2cbb0>
```



Next, we can take the 2D FFT of the grid and center it.

```
fimg = np.fft.fft2(img)
fimgcenter = np.fft.fftshift(fimg)
plt.imshow(np.log(1+np.abs(fimgcenter)), "gray")
```

```
<matplotlib.image.AxesImage at 0x7f01865a3eb0>
```



The center point seems to show a 2D fourier frequency peak that we want to remove. Since `fimgcenter` is a numpy array of numpy arrays, what my plan would be is to remove the arrays assigned to the pixels with x values close to 2000 and y values close to 1500 that form this cross shape. I didn't make much progress in trying to remove this section.