In [26]:
```
import cv2
import numpy as np
import matplotlib.pyplot as plt
```

In [53]:
```
def img_hist(img_set,hist_title_set):
    ch = len(img_set)
    plt.figure(figsize=(20,20))
    for i in range(ch):
        plt.subplot(3,3,i+1)
        plt.hist(img_set[i].ravel(),256,[0,256])
        plt.title(hist_title_set[i])
    plt.show()
```

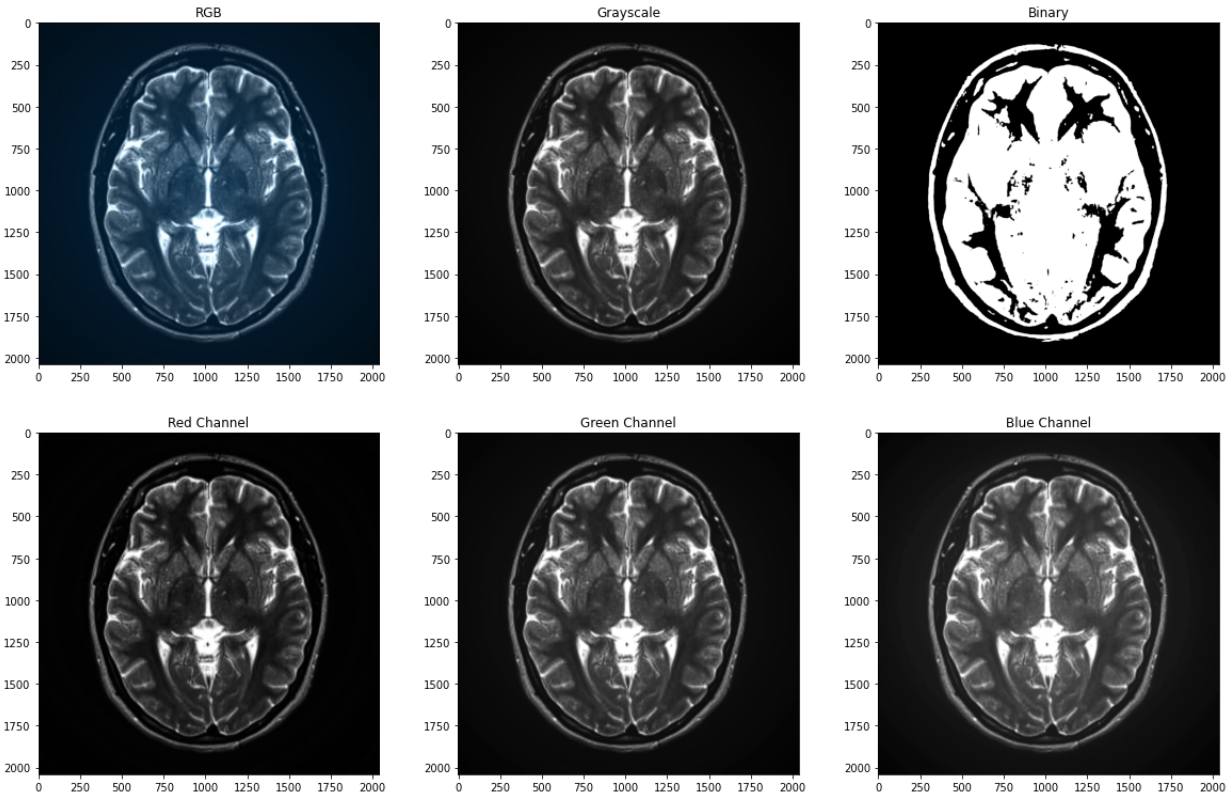
In [75]:
```
def manual_hist(img_set,hist_title_set,r,c):
    ch = len(img_set)
    plt.figure(figsize=(20,20))

    for i in range(ch):
        img = img_set[i]
        histogram = np.zeros((256,), dtype=int)
        for j in range(r):
            for k in range(c):
                temp = img[j,k]
                histogram[temp] += 1
        y =  np.arange(256)

        plt.subplot(3,3,i+1)
        plt.plot(y,histogram)
        plt.ylim(0,)
        plt.fill_between(y,histogram)
        plt.title(hist_title_set[i])
    plt.show()
```

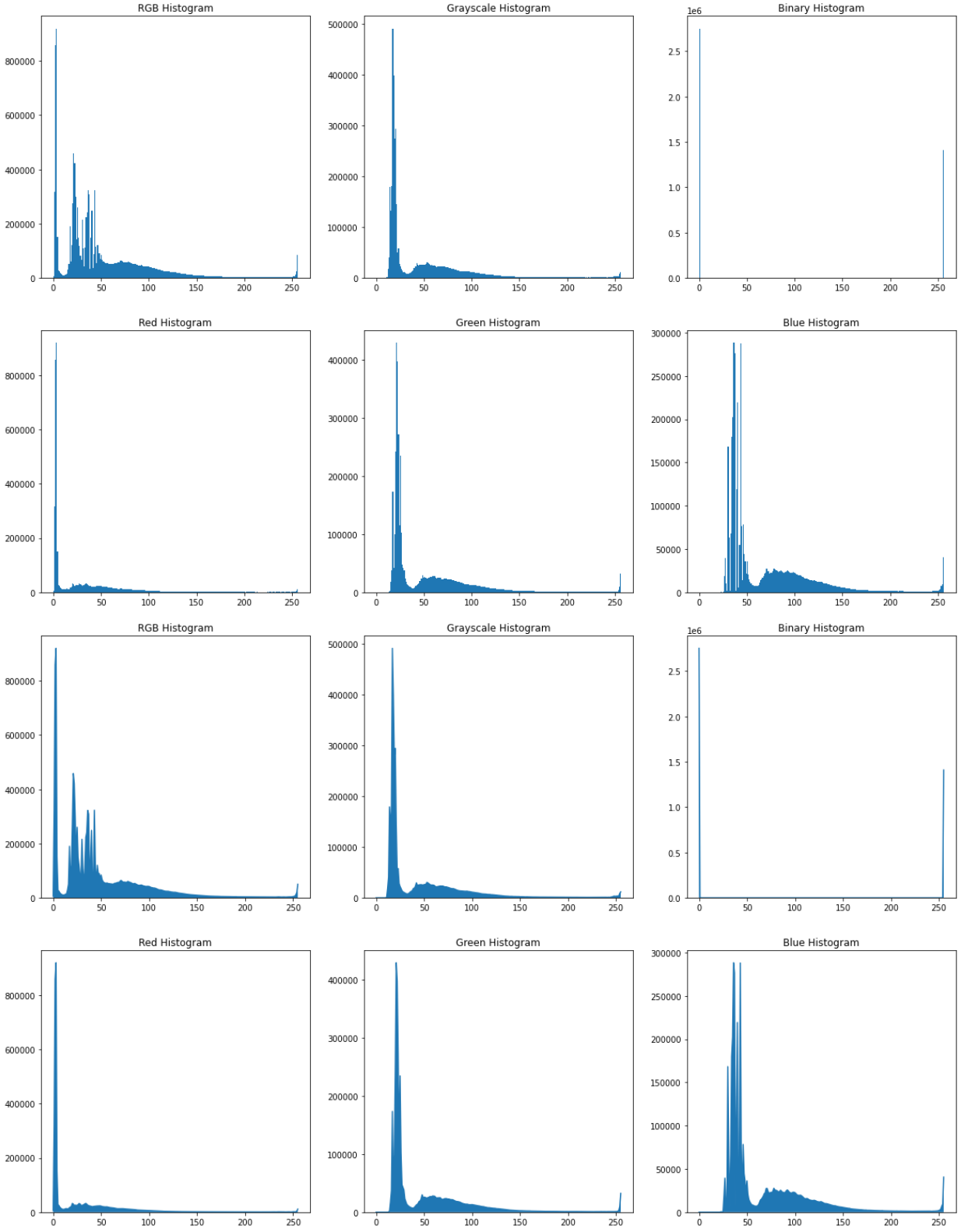
In [35]:
```
def plt_img(img_set,img_title):
    ch = len(img_set)
    plt.figure(figsize=(20,20))
    for i in range(ch):
        plt.subplot(3,3,i+1)
        ln = len(img_set[i].shape)
        if ln == 3:
            plt.imshow(img_set[i])
        else:
            plt.imshow(img_set[i],cmap='gray')
        plt.title(img_title[i])
    plt.show()
```

In [76]:
```
def main():
    rgbImg = plt.imread('mri.jpg')
```

```
    print(rgbImg.shape)

    grayscale = cv2.cvtColor(rgbImg,cv2.COLOR_RGB2GRAY)
    print(grayscale.shape)
    r,c = grayscale.shape
    _, binaryImg = cv2.threshold(grayscale, 50, 255, cv2.THRESH_BINARY)
    print(binaryImg.shape)

    redChannel = rgbImg[:,:,0]
    greenChannel = rgbImg[:,:,1]
    blueChannel = rgbImg[:,:,2]



    img_set = [rgbImg,grayscale,binaryImg,redChannel,greenChannel,blueChannel]
    img_title = ['RGB','Grayscale','Binary','Red Channel','Green Channel','Blu
    hist_title_set = ['RGB Histogram', 'Grayscale Histogram', 'Binary Histogra

    plt_img(img_set,img_title)
    img_hist(img_set,hist_title_set)
    manual_hist(img_set,hist_title_set,r,c)

if __name__ == '__main__':
    main()
```

```
(2040, 2040, 3)
(2040, 2040)
(2040, 2040)
```




RGB Histogram
Grayscale Histogram
Binary Histogram
1e6
Red Histogram
Green Histogram
Blue Histogram
RGB Histogram
Grayscale Histogram
Binary Histogram
1e6
Red Histogram
Green Histogram
Blue Histogram

In [ ]:

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