

Image Reading, processing using NP, Plt, PIL - 12 Aug

```
In [1]: import numpy as np
```

```
In [2]: ones_arr = np.ones((5,5),dtype=int)
```

```
In [3]: ones_arr
```

```
Out[3]: array([[1, 1, 1, 1, 1],  
               [1, 1, 1, 1, 1],  
               [1, 1, 1, 1, 1],  
               [1, 1, 1, 1, 1],  
               [1, 1, 1, 1, 1]])
```

```
In [4]: ones_arr * 255
```

```
Out[4]: array([[255, 255, 255, 255, 255],  
               [255, 255, 255, 255, 255],  
               [255, 255, 255, 255, 255],  
               [255, 255, 255, 255, 255],  
               [255, 255, 255, 255, 255]])
```

```
In [5]: import matplotlib.pyplot as plt
```

```
In [6]: #!matplotlib inline # all the graph should keep inside the line
```

```
In [10]: from PIL import Image # python imaging library
```

```
In [12]: # horse_img = Image.open('C:\Users\MGAUTAM\DownLoads\Elephane.jpeg')
```

```
In [13]: elephant = Image.open(r'C:\Users\MGAUTAM\Downloads\Elephane.jpeg')
```

```
In [15]: elephant
```

Out[15]:



In [37]: `danphe_img = Image.open(r'C:\Users\MGAUTAM\Downloads\Danphe.jpeg')`

In [38]: `danphe_img`

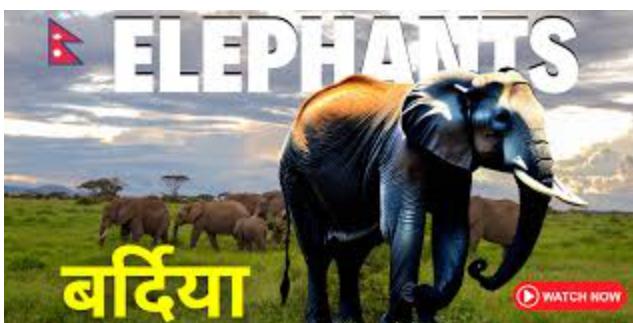
Out[38]:



In [24]: `pic = Image.open(r'C:\Users\MGAUTAM\Downloads\Elephane.jpeg')`

In [25]: `pic`

Out[25]:



```
In [26]: my_img = Image.open(r'C:\Users\MGAUTAM\Downloads\Lumbini.jpeg')
```

```
In [27]: my_img
```

```
Out[27]:
```



```
In [39]: type(danphe_img)
```

```
Out[39]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [40]: danphe_arr = np.asarray(danphe_img)  
danphe_arr
```

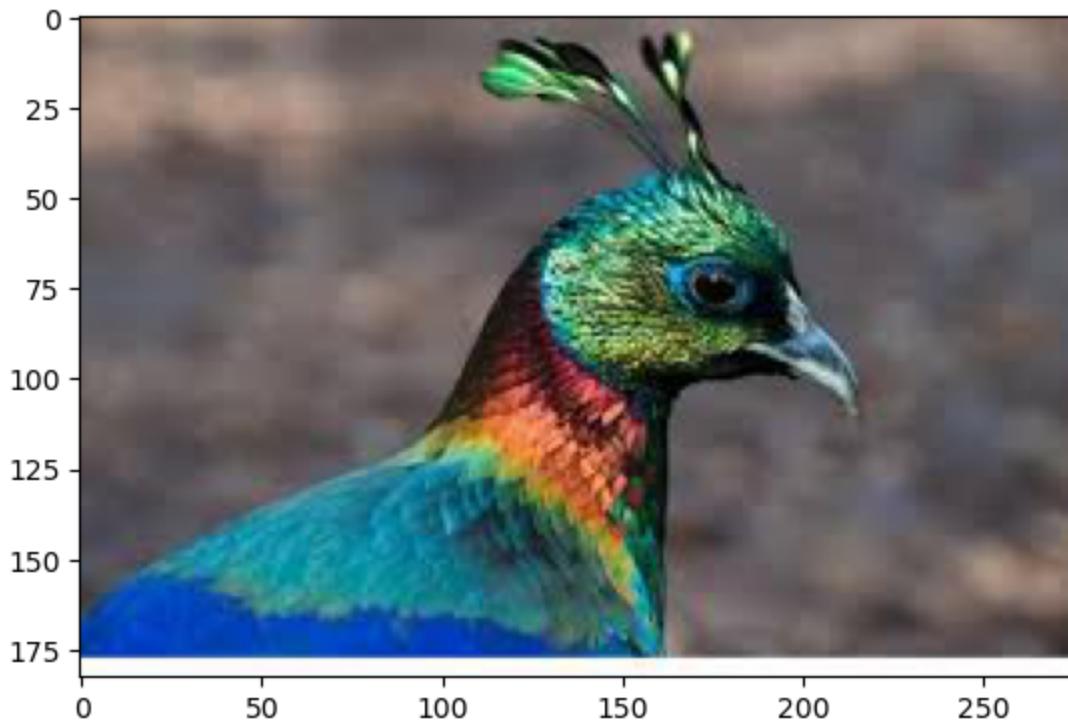
```
Out[40]: array([[[158, 127, 109],  
                 [160, 129, 111],  
                 [163, 132, 114],  
                 ...,  
                 [130, 106, 102],  
                 [129, 105, 101],  
                 [129, 105, 101]],  
  
                [[154, 125, 107],  
                 [156, 127, 109],  
                 [159, 130, 112],  
                 ...,  
                 [128, 104, 100],  
                 [128, 104, 100],  
                 [127, 103, 99]],  
  
                [[149, 122, 105],  
                 [151, 124, 107],  
                 [154, 127, 110],  
                 ...,  
                 [126, 102, 98],  
                 [126, 102, 98],  
                 [126, 102, 98]],  
  
                ...,  
  
                [[255, 253, 243],  
                 [255, 253, 243],  
                 [255, 253, 243],  
                 ...,  
                 [255, 254, 255],  
                 [255, 254, 255],  
                 [255, 254, 255]],  
  
                [[250, 252, 249],  
                 [250, 252, 249],  
                 [250, 252, 249],  
                 ...,  
                 [255, 254, 255],  
                 [255, 254, 255],  
                 [255, 254, 255]],  
  
                [[245, 255, 251],  
                 [245, 255, 253],  
                 [245, 255, 253],  
                 ...,  
                 [255, 253, 254],  
                 [255, 253, 254],  
                 [255, 253, 254]]], dtype=uint8)
```

```
In [41]: type(danphe_arr)
```

```
Out[41]: numpy.ndarray
```

```
In [42]: plt.imshow(danphe_arr)
# plt.show(horse_arr) new os
```

```
Out[42]: <matplotlib.image.AxesImage at 0x241b49cfb10>
```



```
In [43]: danphe_arr.shape
```

```
Out[43]: (183, 275, 3)
```

```
In [44]: danphe_red = danphe_arr.copy()
```

```
In [45]: danphe_red
```

```
Out[45]: array([[[158, 127, 109],  
                 [160, 129, 111],  
                 [163, 132, 114],  
                 ...,  
                 [130, 106, 102],  
                 [129, 105, 101],  
                 [129, 105, 101]],  
  
                [[154, 125, 107],  
                 [156, 127, 109],  
                 [159, 130, 112],  
                 ...,  
                 [128, 104, 100],  
                 [128, 104, 100],  
                 [127, 103, 99]],  
  
                [[149, 122, 105],  
                 [151, 124, 107],  
                 [154, 127, 110],  
                 ...,  
                 [126, 102, 98],  
                 [126, 102, 98],  
                 [126, 102, 98]],  
  
                ...,  
  
                [[255, 253, 243],  
                 [255, 253, 243],  
                 [255, 253, 243],  
                 ...,  
                 [255, 254, 255],  
                 [255, 254, 255],  
                 [255, 254, 255]],  
  
                [[250, 252, 249],  
                 [250, 252, 249],  
                 [250, 252, 249],  
                 ...,  
                 [255, 254, 255],  
                 [255, 254, 255],  
                 [255, 254, 255]],  
  
                [[245, 255, 251],  
                 [245, 255, 253],  
                 [245, 255, 253],  
                 ...,  
                 [255, 253, 254],  
                 [255, 253, 254],  
                 [255, 253, 254]]], dtype=uint8)
```

```
In [46]: danphe_arr == danphe_red
```

```
Out[46]: array([[[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   .....

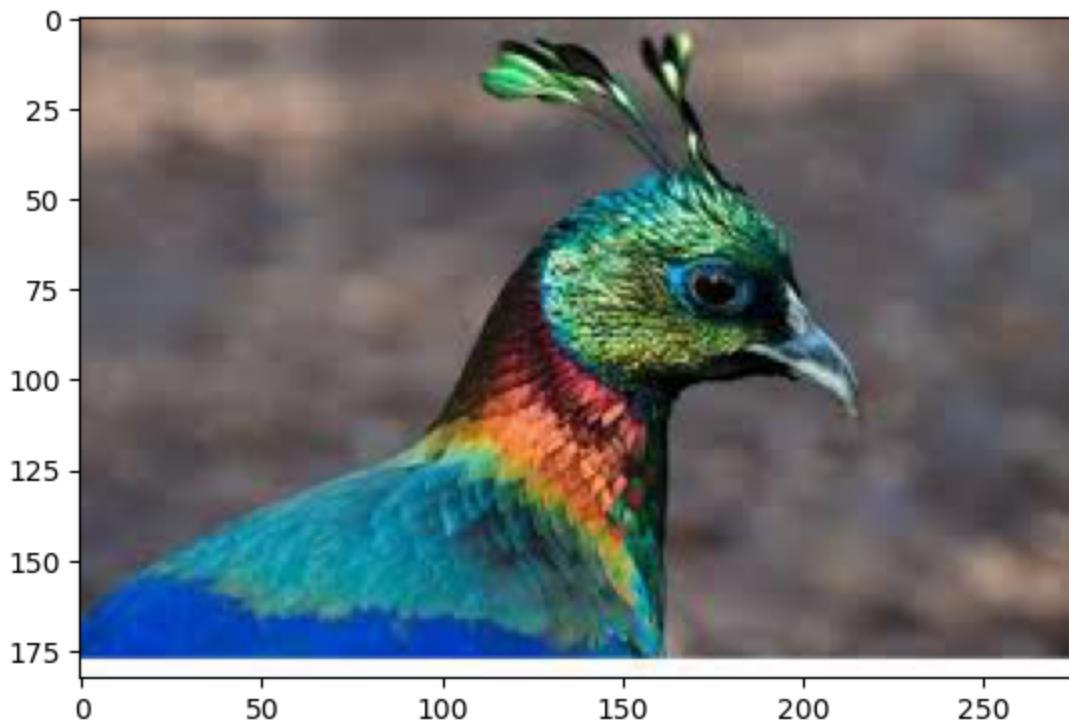
   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]]])
```

```
In [47]: plt.imshow(danphe_red)
```

```
Out[47]: <matplotlib.image.AxesImage at 0x241b4a3f4d0>
```

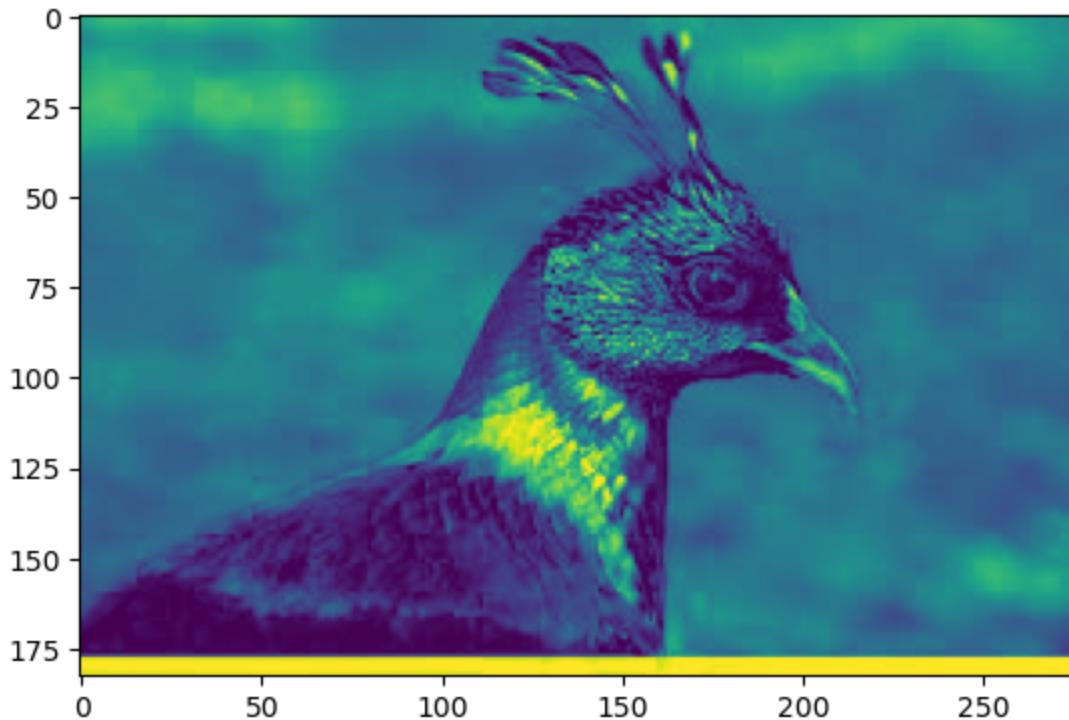


```
In [48]: danphe_red.shape
```

```
Out[48]: (183, 275, 3)
```

```
In [49]: # R G B  
plt.imshow(danphe_red[:, :, 0])
```

```
Out[49]: <matplotlib.image.AxesImage at 0x241b529a490>
```

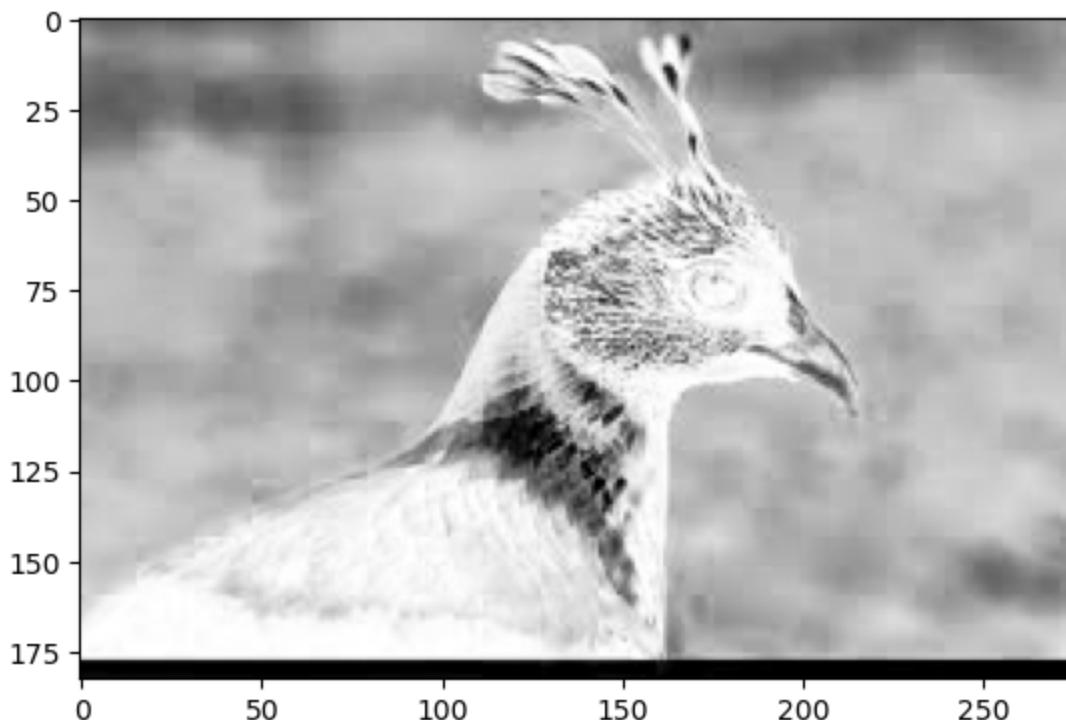


```
In [50]: danphe_red[:, :, 0]
```

```
Out[50]: array([[158, 160, 163, ..., 130, 129, 129],  
   [154, 156, 159, ..., 128, 128, 127],  
   [149, 151, 154, ..., 126, 126, 126],  
   ...,  
   [255, 255, 255, ..., 255, 255, 255],  
   [250, 250, 250, ..., 255, 255, 255],  
   [245, 245, 245, ..., 255, 255, 255]], dtype=uint8)
```

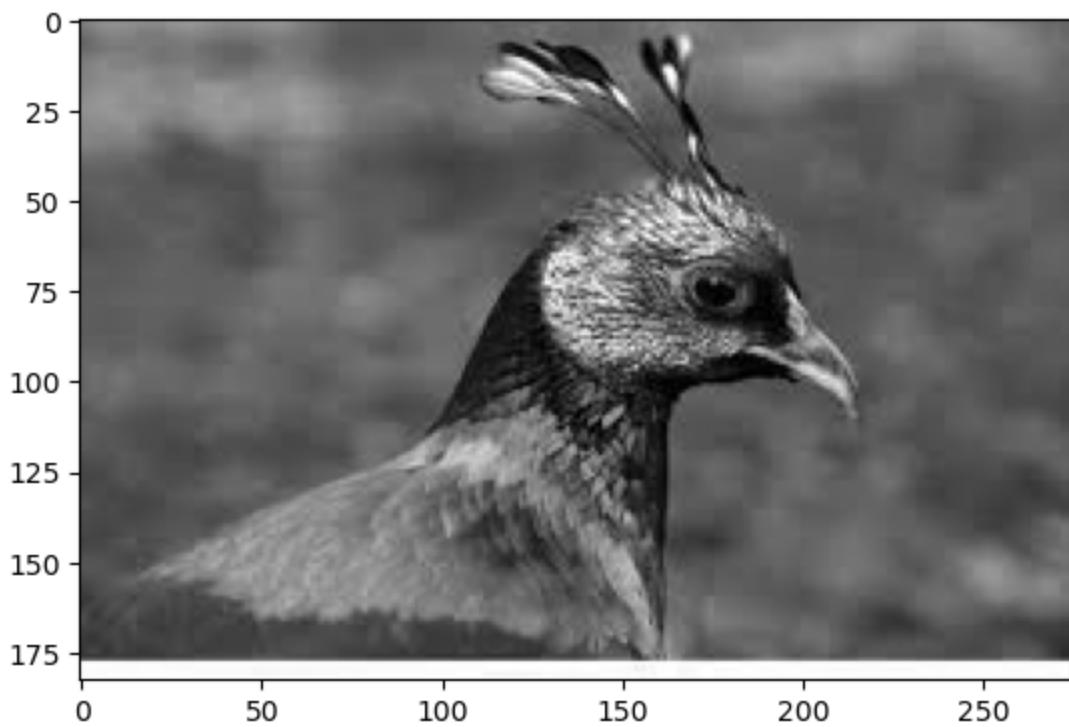
```
In [51]: plt.imshow(danphe_red[:, :, 0], cmap='Greys')
```

```
Out[51]: <matplotlib.image.AxesImage at 0x241b53251d0>
```



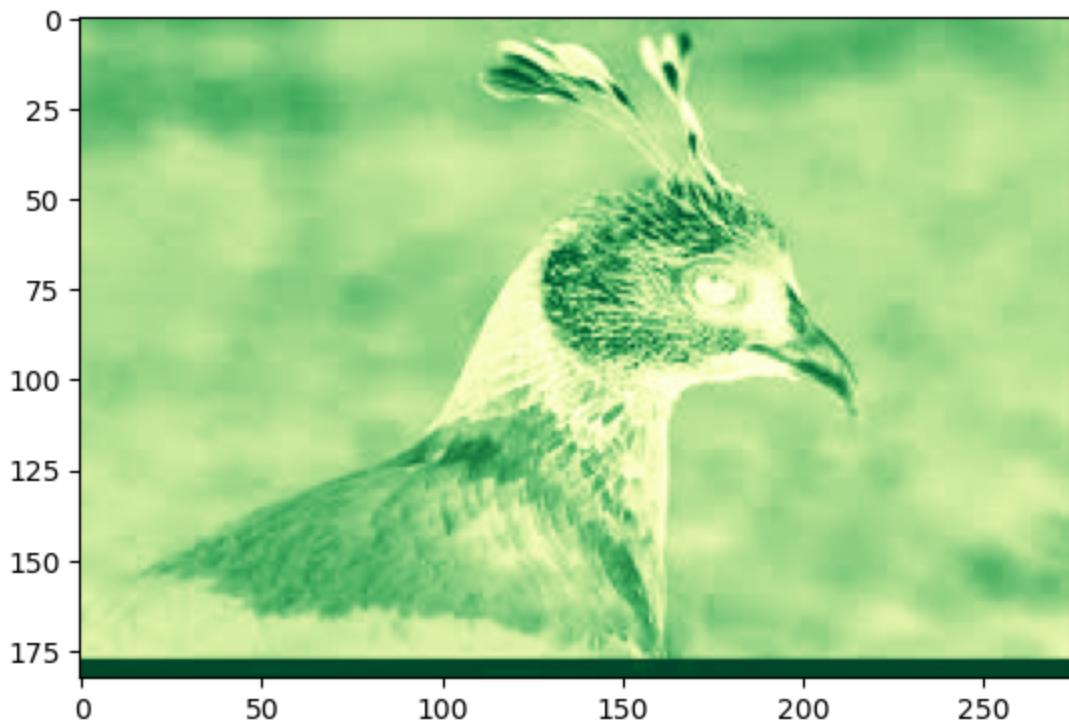
```
In [52]: plt.imshow(danphe_red[:, :, 1], cmap='grey')
```

```
Out[52]: <matplotlib.image.AxesImage at 0x241b53c0050>
```



```
In [53]: plt.imshow(danphe_red[:, :, 1], cmap='YlGn')
# plt.show()
```

```
Out[53]: <matplotlib.image.AxesImage at 0x241b5416d50>
```



```
In [54]: danphe_red[:, :, 0]
```

```
Out[54]: array([[158, 160, 163, ..., 130, 129, 129],  
                [154, 156, 159, ..., 128, 128, 127],  
                [149, 151, 154, ..., 126, 126, 126],  
                ...,  
                [255, 255, 255, ..., 255, 255, 255],  
                [250, 250, 250, ..., 255, 255, 255],  
                [245, 245, 245, ..., 255, 255, 255]], dtype=uint8)
```

```
In [55]: danphe_red[:, :, 1]
```

```
Out[55]: array([[127, 129, 132, ..., 106, 105, 105],  
                [125, 127, 130, ..., 104, 104, 103],  
                [122, 124, 127, ..., 102, 102, 102],  
                ...,  
                [253, 253, 253, ..., 254, 254, 254],  
                [252, 252, 252, ..., 254, 254, 254],  
                [255, 255, 255, ..., 253, 253, 253]], dtype=uint8)
```

```
In [56]: danphe_red[:, :, 2]
```

```
Out[56]: array([[109, 111, 114, ..., 102, 101, 101],  
                [107, 109, 112, ..., 100, 100, 99],  
                [105, 107, 110, ..., 98, 98, 98],  
                ...,  
                [243, 243, 243, ..., 255, 255, 255],  
                [249, 249, 249, ..., 255, 255, 255],  
                [251, 253, 253, ..., 254, 254, 254]], dtype=uint8)
```

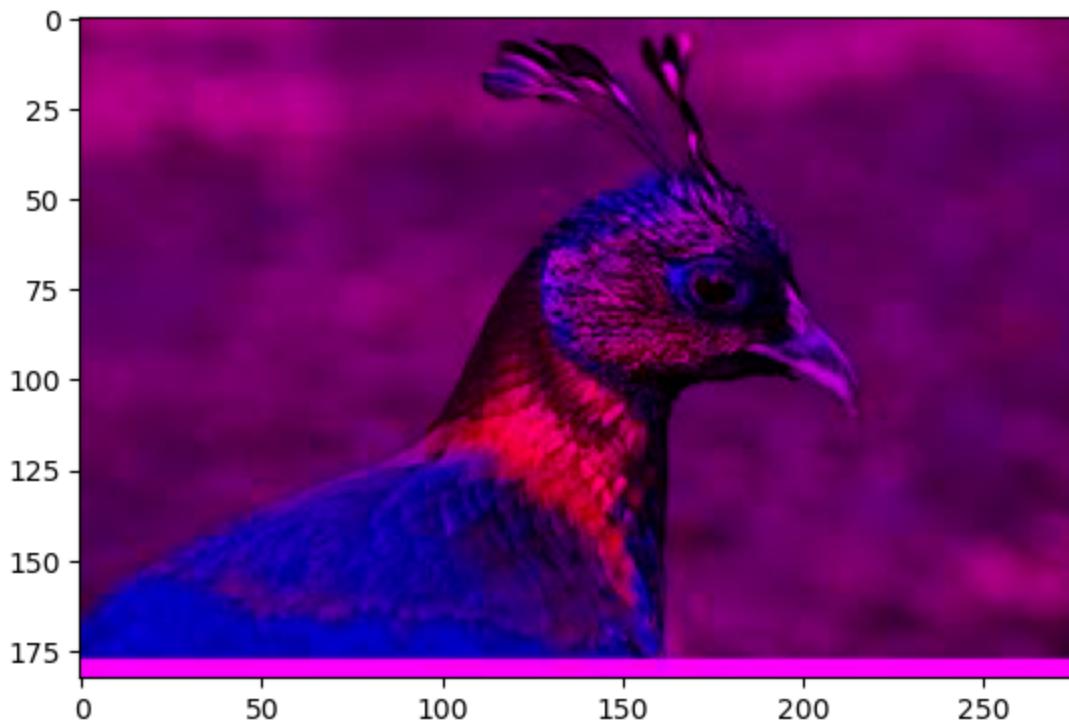
```
In [58]: danphe_red[:, :, 1] = 0
```

```
In [59]: danphe_red[:, :, 1]
```

```
Out[59]: array([[0, 0, 0, ..., 0, 0, 0],  
                [0, 0, 0, ..., 0, 0, 0],  
                [0, 0, 0, ..., 0, 0, 0],  
                ...,  
                [0, 0, 0, ..., 0, 0, 0],  
                [0, 0, 0, ..., 0, 0, 0],  
                [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [60]: plt.imshow(danphe_red)
```

```
Out[60]: <matplotlib.image.AxesImage at 0x241b5491a90>
```



```
In [61]: danphe_red[:, :, 2]
```

```
Out[61]: array([[109, 111, 114, ..., 102, 101, 101],
   [107, 109, 112, ..., 100, 100, 99],
   [105, 107, 110, ..., 98, 98, 98],
   ...,
   [243, 243, 243, ..., 255, 255, 255],
   [249, 249, 249, ..., 255, 255, 255],
   [251, 253, 253, ..., 254, 254, 254]], dtype=uint8)
```

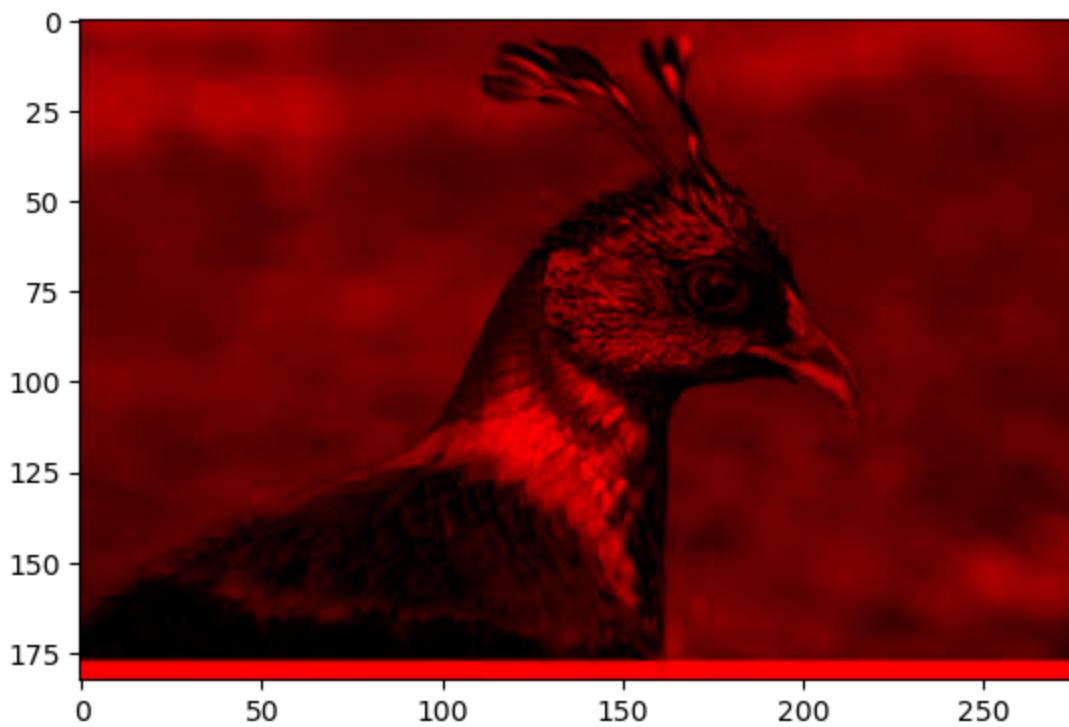
```
In [62]: danphe_red[:, :, 2] = 0
```

```
In [63]: danphe_red[:, :, 2]
```

```
Out[63]: array([[0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   ...,
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [64]: plt.imshow(danphe_red)
```

```
Out[64]: <matplotlib.image.AxesImage at 0x241b55207d0>
```



In [65]: `danphe_red`

```
Out[65]: array([[[158,    0,    0],
   [160,    0,    0],
   [163,    0,    0],
   ...,
   [130,    0,    0],
   [129,    0,    0],
   [129,    0,    0]],

  [[154,    0,    0],
   [156,    0,    0],
   [159,    0,    0],
   ...,
   [128,    0,    0],
   [128,    0,    0],
   [127,    0,    0]],

  [[149,    0,    0],
   [151,    0,    0],
   [154,    0,    0],
   ...,
   [126,    0,    0],
   [126,    0,    0],
   [126,    0,    0]],

  ...,

  [[255,    0,    0],
   [255,    0,    0],
   [255,    0,    0],
   ...,
   [255,    0,    0],
   [255,    0,    0],
   [255,    0,    0]],

  [[250,    0,    0],
   [250,    0,    0],
   [250,    0,    0],
   ...,
   [255,    0,    0],
   [255,    0,    0],
   [255,    0,    0]],

  [[245,    0,    0],
   [245,    0,    0],
   [245,    0,    0],
   ...,
   [255,    0,    0],
   [255,    0,    0],
   [255,    0,    0]]], dtype=uint8)
```

```
In [66]: danphe_red
```

```
Out[66]: array([[[158,  0,  0],
   [160,  0,  0],
   [163,  0,  0],
   ...,
   [130,  0,  0],
   [129,  0,  0],
   [129,  0,  0]],

   [[154,  0,  0],
   [156,  0,  0],
   [159,  0,  0],
   ...,
   [128,  0,  0],
   [128,  0,  0],
   [127,  0,  0]],

   [[149,  0,  0],
   [151,  0,  0],
   [154,  0,  0],
   ...,
   [126,  0,  0],
   [126,  0,  0],
   [126,  0,  0]],

   ...,

   [[255,  0,  0],
   [255,  0,  0],
   [255,  0,  0],
   ...,
   [255,  0,  0],
   [255,  0,  0],
   [255,  0,  0]],

   [[250,  0,  0],
   [250,  0,  0],
   [250,  0,  0],
   ...,
   [255,  0,  0],
   [255,  0,  0],
   [255,  0,  0]],

   [[245,  0,  0],
   [245,  0,  0],
   [245,  0,  0],
   ...,
   [255,  0,  0],
   [255,  0,  0],
   [255,  0,  0]]], dtype=uint8)
```

```
In [ ]: horse_img
```

```
In [67]: arr1 = np.asarray(danphe_red)
```

```
In [68]: type(arr1)
```

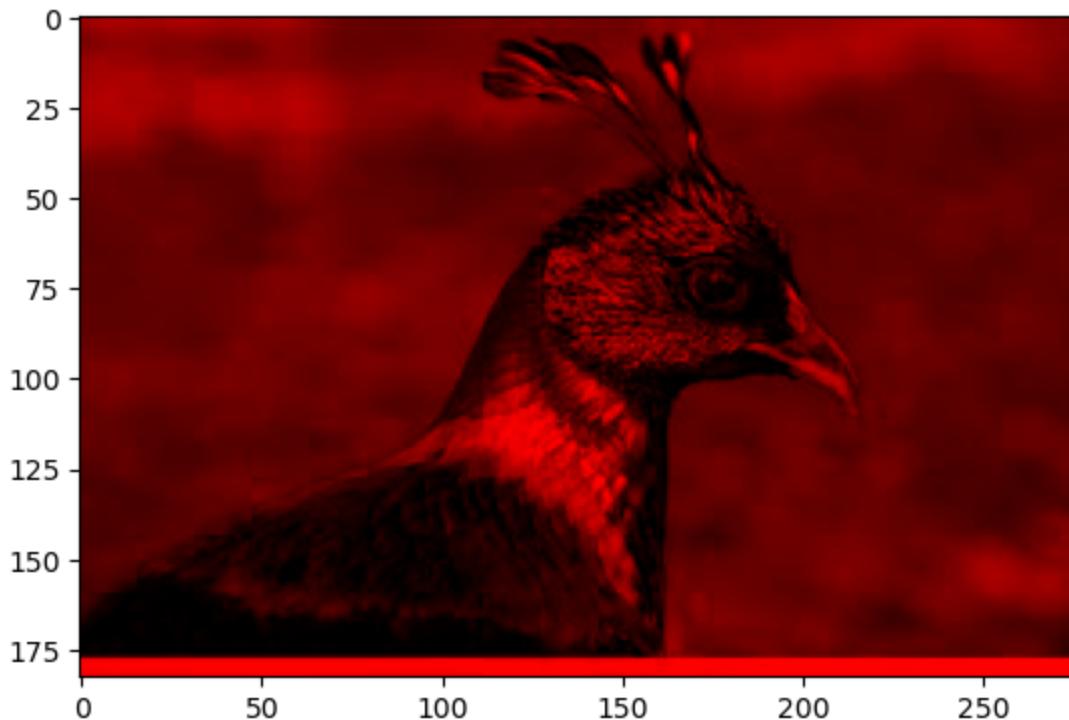
```
Out[68]: numpy.ndarray
```

```
In [69]: arr1.shape
```

```
Out[69]: (183, 275, 3)
```

```
In [70]: plt.imshow(arr1)
```

```
Out[70]: <matplotlib.image.AxesImage at 0x241b556b4d0>
```

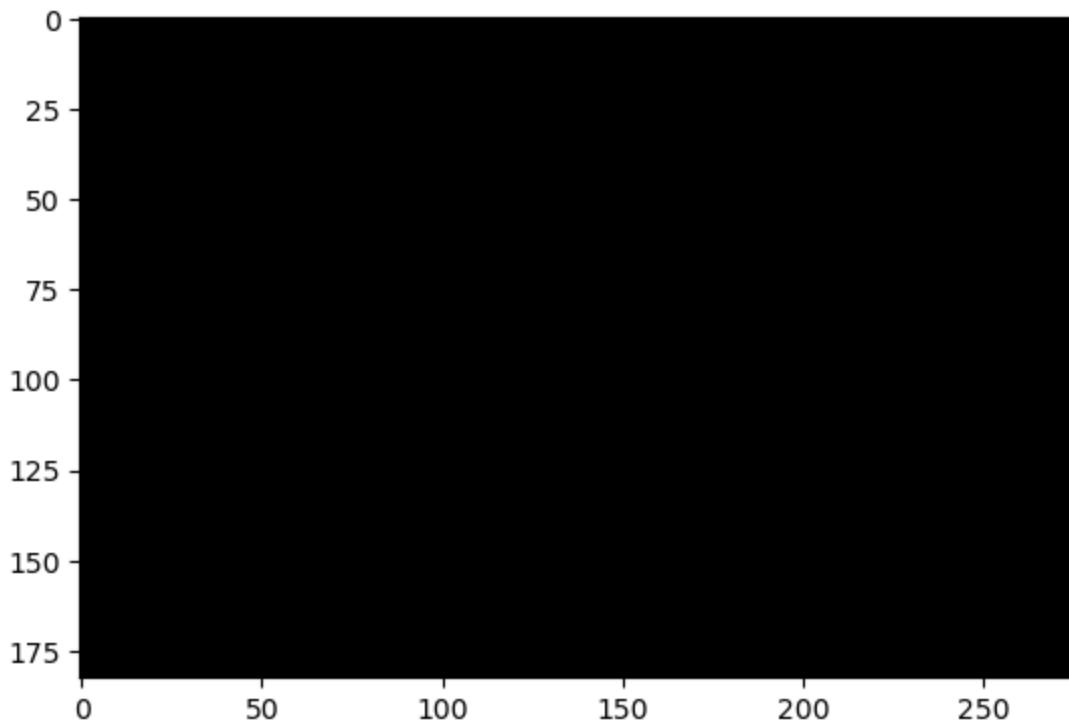


```
In [74]: danphe_red = arr1.copy()
```

```
In [77]: danphe_red[:, :, 0] = 0
```

```
In [78]: plt.imshow(danphe_red)
```

```
Out[78]: <matplotlib.image.AxesImage at 0x241b560a210>
```



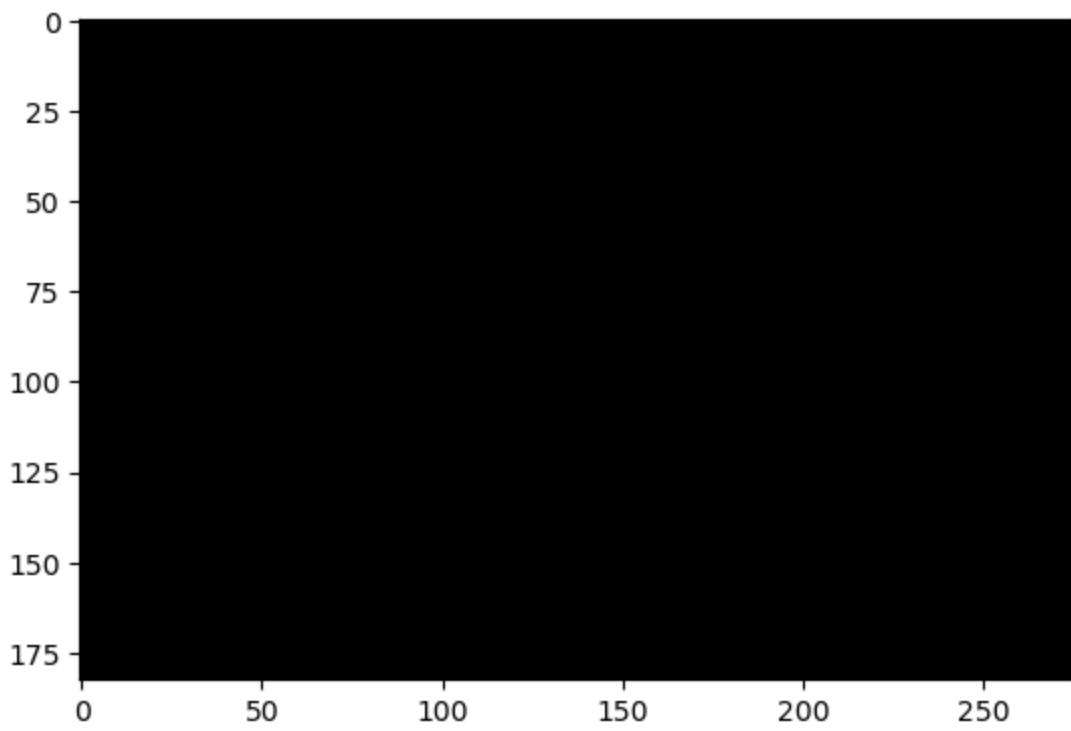
```
In [79]: danphe_red[:, :, 1]
```

```
Out[79]: array([[0, 0, 0, ..., 0, 0, 0],  
                 [0, 0, 0, ..., 0, 0, 0],  
                 [0, 0, 0, ..., 0, 0, 0],  
                 ...,  
                 [0, 0, 0, ..., 0, 0, 0],  
                 [0, 0, 0, ..., 0, 0, 0],  
                 [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [80]: danphe_red[:, :, 1] = 0
```

```
In [81]: plt.imshow(danphe_red)
```

```
Out[81]: <matplotlib.image.AxesImage at 0x241b6658f50>
```



pro1 is completed

In []:

In []: