Image Reading

March 14, 2025

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

[2]:
```
import matplotlib.pyplot as plt
```

[3]:
```
from PIL import Image
```

[4]:
```
lion_img = Image.open(r'D:\Naresh IT\1st Project\lion.jpg')
```

[5]:
```
lion_img
```

[5]:

[6]:
```
type(lion_img)
```

[6]:
```
PIL.JpegImagePlugin.JpegImageFile
```

[7]:
```
lion_arr = np.asarray(lion_img)
lion_arr
```

```
[7]: array([[[187, 213, 238],
             [188, 214, 239],
             [188, 214, 239],
             …,
             [179, 210, 228],
             [179, 210, 228],
             [179, 210, 228]],

            [[188, 214, 239],
             [189, 215, 240],
             [189, 215, 240],
             …,
             [179, 210, 228],
             [179, 210, 228],
             [179, 210, 228]],

            [[189, 215, 238],
             [190, 216, 241],
             [190, 216, 241],
             …,
             [179, 210, 228],
             [178, 209, 227],
             [178, 209, 227]],

            …,

            [[ 86,  89,  68],
             [ 86,  89,  68],
             [ 84,  87,  66],
             …,
             [122,  66,  33],
             [140,  84,  51],
             [147,  91,  58]],

            [[ 88,  91,  70],
             [ 87,  90,  69],
             [ 86,  89,  68],
             …,
             [120,  64,  31],
             [142,  86,  53],
             [152,  96,  63]],

            [[ 89,  92,  71],
             [ 88,  91,  70],
             [ 87,  90,  69],
             …,
             [120,  64,  31],
```

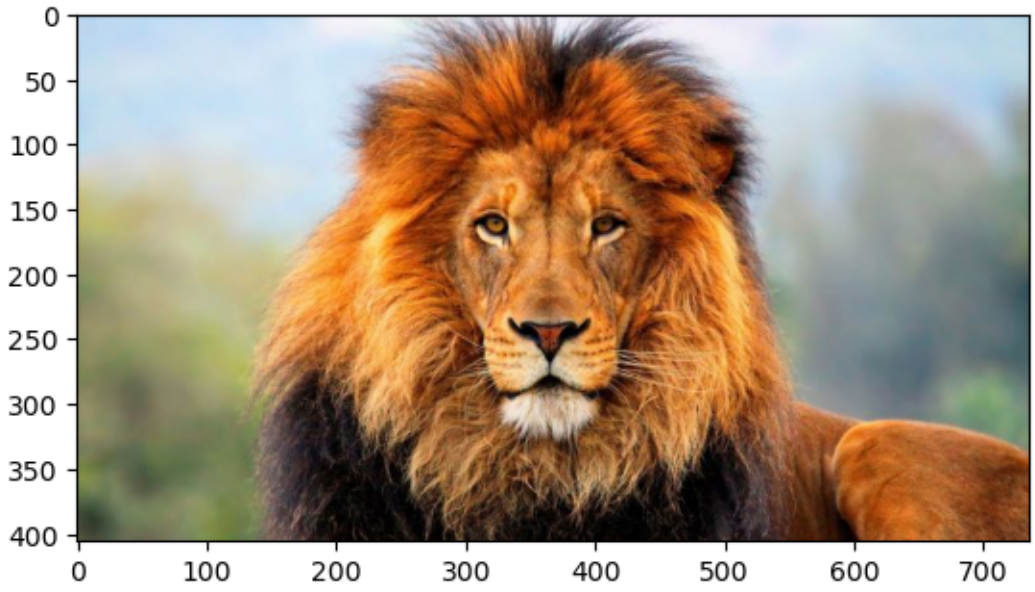
```
        [138,  82,  49],
        [153,  97,  64]]], dtype=uint8)
```

[8]:
```
type(lion_arr)
```

[8]:
```
numpy.ndarray
```

[9]:
```
plt.imshow(lion_arr)
```

[9]:
```
<matplotlib.image.AxesImage at 0x20029dd1160>
```



[10]:
```
lion_arr.shape
```

[10]:
```
(406, 736, 3)
```

[11]:
```
lion_arr1 = lion_arr.copy()
lion_arr1
```

[11]:
```
array([[[187, 213, 238],
        [188, 214, 239],
        [188, 214, 239],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[188, 214, 239],
```

```
        [189, 215, 240],
        [189, 215, 240],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[189, 215, 238],
        [190, 216, 241],
        [190, 216, 241],
        …,
        [179, 210, 228],
        [178, 209, 227],
        [178, 209, 227]],

       …,

       [[ 86,  89,  68],
        [ 86,  89,  68],
        [ 84,  87,  66],
        …,
        [122,  66,  33],
        [140,  84,  51],
        [147,  91,  58]],

       [[ 88,  91,  70],
        [ 87,  90,  69],
        [ 86,  89,  68],
        …,
        [120,  64,  31],
        [142,  86,  53],
        [152,  96,  63]],

       [[ 89,  92,  71],
        [ 88,  91,  70],
        [ 87,  90,  69],
        …,
        [120,  64,  31],
        [138,  82,  49],
        [153,  97,  64]]], dtype=uint8)
```

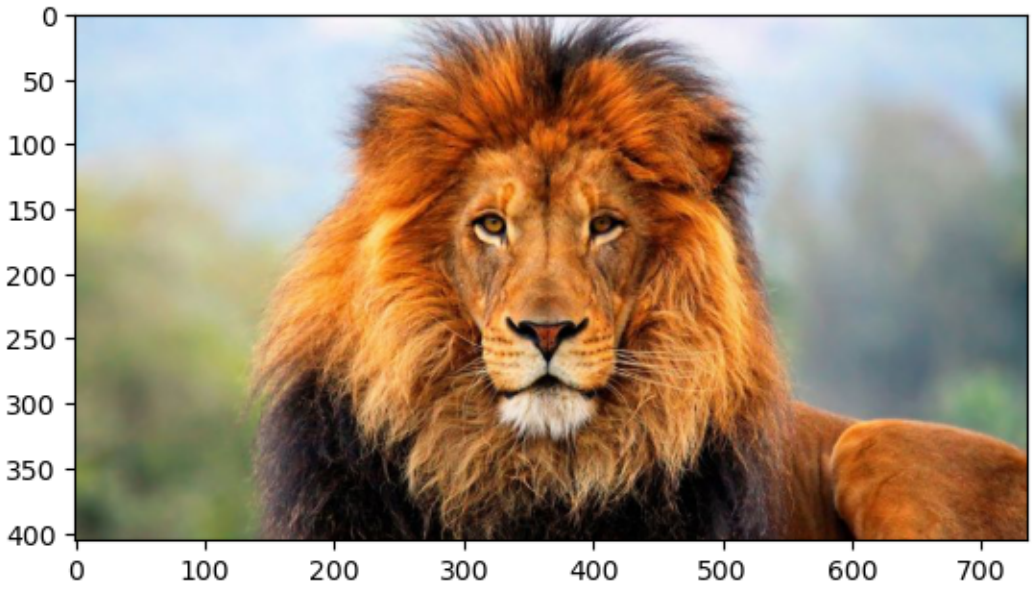
[12]:
```
lion_arr1 == lion_arr
```

[12]:
```
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]]])
```

[13]:
```
plt.imshow(lion_arr1)
```

[13]: <matplotlib.image.AxesImage at 0x20029e78260>

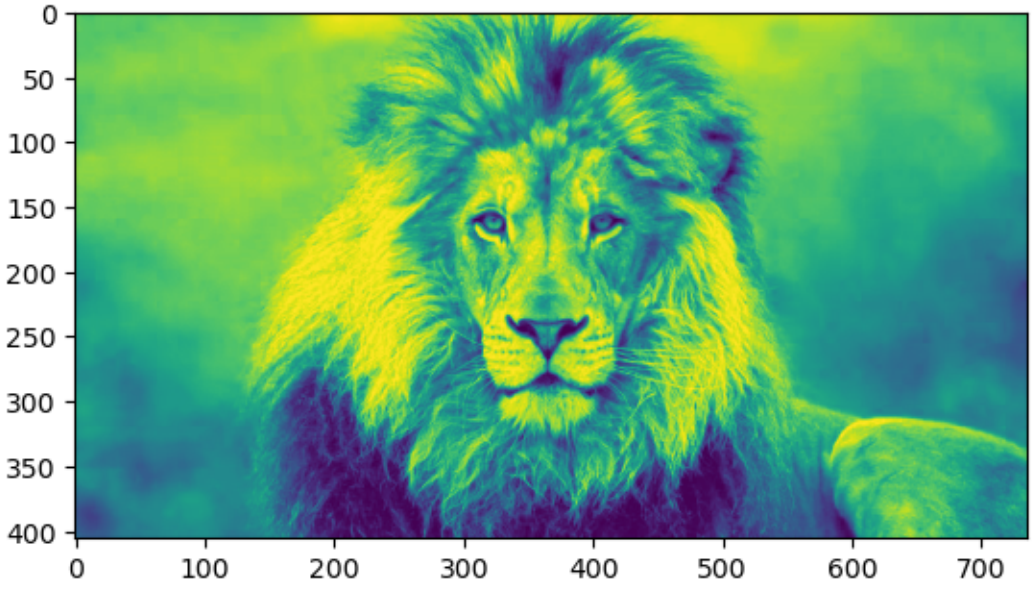


[14]:
```
lion_arr1.shape
```

[14]: (406, 736, 3)

[15]:
```
plt.imshow(lion_arr1[:,:,0])
```

[15]: <matplotlib.image.AxesImage at 0x2002b160fb0>

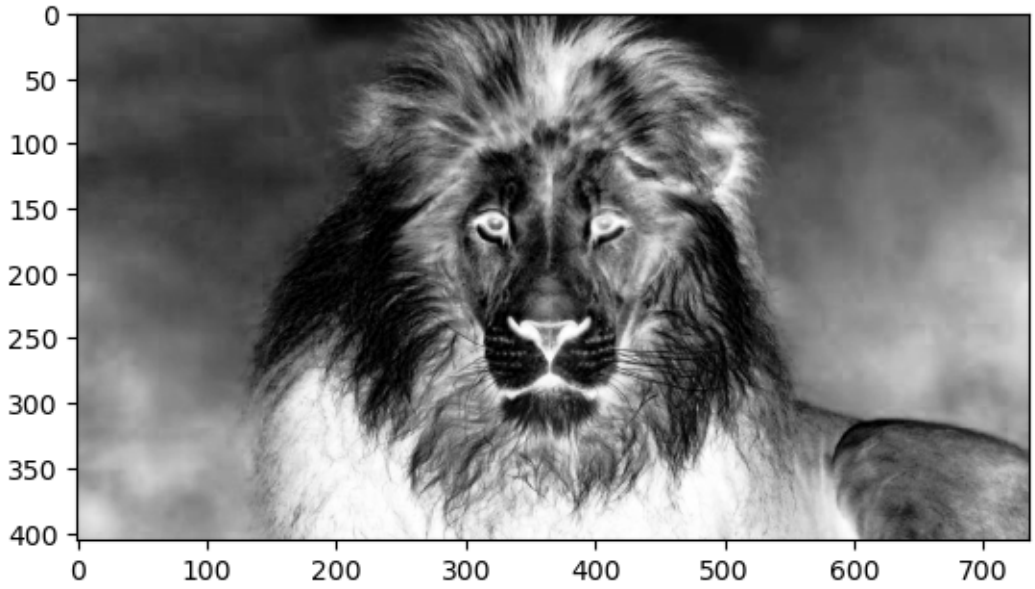


[16]:
```
lion_arr1[:,:,0]
```

[16]:
```
array([[187, 188, 188, …, 179, 179, 179],
       [188, 189, 189, …, 179, 179, 179],
       [189, 190, 190, …, 179, 178, 178],
       …,
       [ 86,  86,  84, …, 122, 140, 147],
       [ 88,  87,  86, …, 120, 142, 152],
       [ 89,  88,  87, …, 120, 138, 153]], dtype=uint8)
```

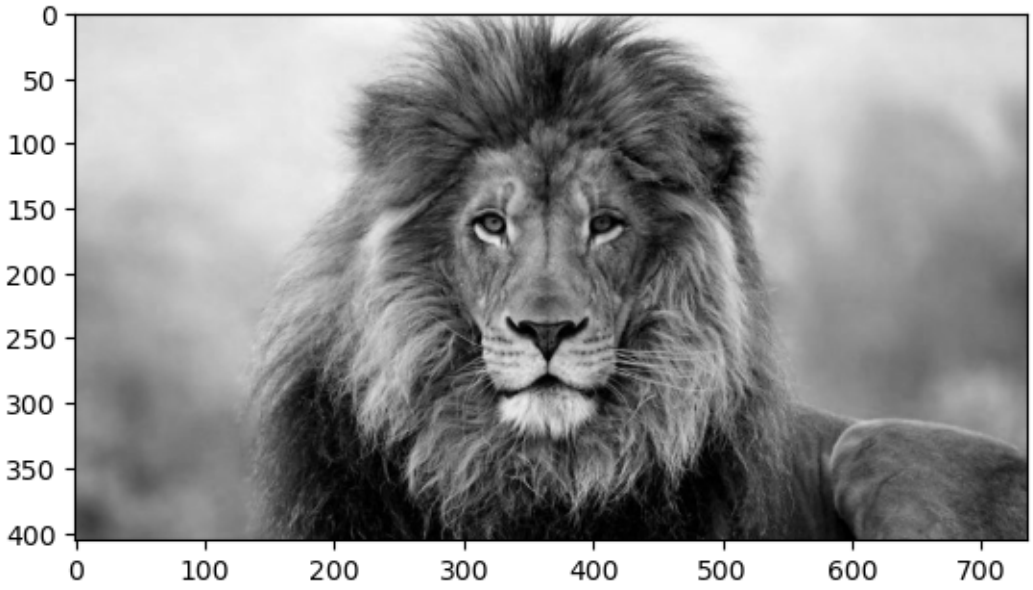
[17]:
```
plt.imshow(lion_arr1[:,:,0], cmap='Greys')
```

[17]:
```
<matplotlib.image.AxesImage at 0x2002b1e6b70>
```



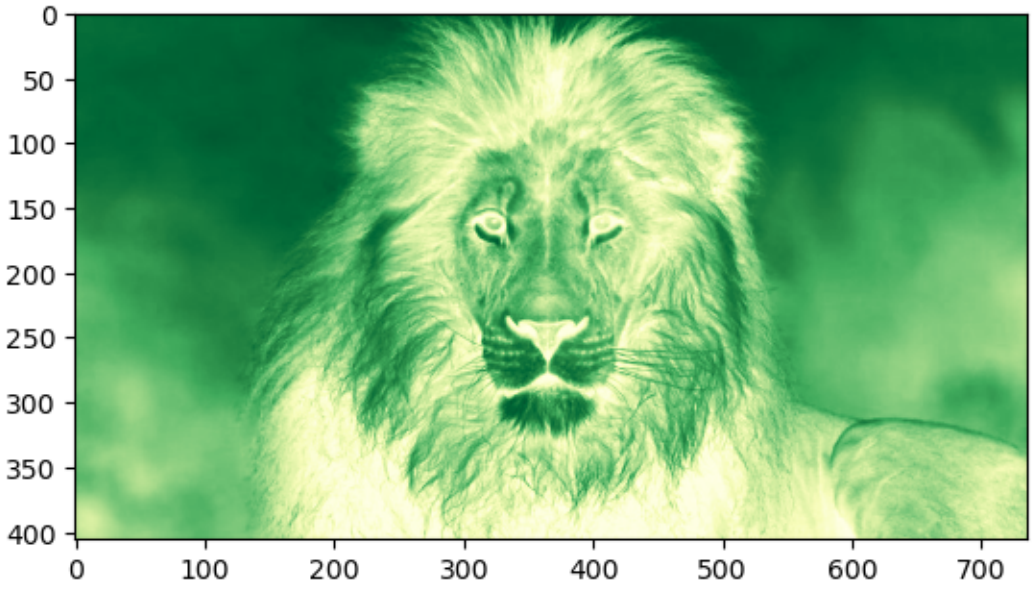
[18]:
```
plt.imshow(lion_arr1[:,:,1], cmap='grey')
```

[18]:
```
<matplotlib.image.AxesImage at 0x2002b8d5190>
```



[19]:
```
plt.imshow(lion_arr1[:,:,1], cmap='YlGn')
```

[19]:
```
<matplotlib.image.AxesImage at 0x2002b1afc80>
```



[20]:
```
lion_arr1[:,:,0]
```

[20]:
```
array([[187, 188, 188, …, 179, 179, 179],
       [188, 189, 189, …, 179, 179, 179],
       [189, 190, 190, …, 179, 178, 178],
       …,
       [ 86,  86,  84, …, 122, 140, 147],
       [ 88,  87,  86, …, 120, 142, 152],
       [ 89,  88,  87, …, 120, 138, 153]], dtype=uint8)
```

[21]:
```
lion_arr1[:,:,1]
```

[21]:
```
array([[213, 214, 214, …, 210, 210, 210],
       [214, 215, 215, …, 210, 210, 210],
       [215, 216, 216, …, 210, 209, 209],
       …,
       [ 89,  89,  87, …,  66,  84,  91],
       [ 91,  90,  89, …,  64,  86,  96],
       [ 92,  91,  90, …,  64,  82,  97]], dtype=uint8)
```

[22]:
```
lion_arr1[:,:,2]
```

[22]:
```
array([[238, 239, 239, …, 228, 228, 228],
       [239, 240, 240, …, 228, 228, 228],
       [238, 241, 241, …, 228, 227, 227],
       …,
       [ 68,  68,  66, …,  33,  51,  58],
       [ 70,  69,  68, …,  31,  53,  63],
       [ 71,  70,  69, …,  31,  49,  64]], dtype=uint8)
```

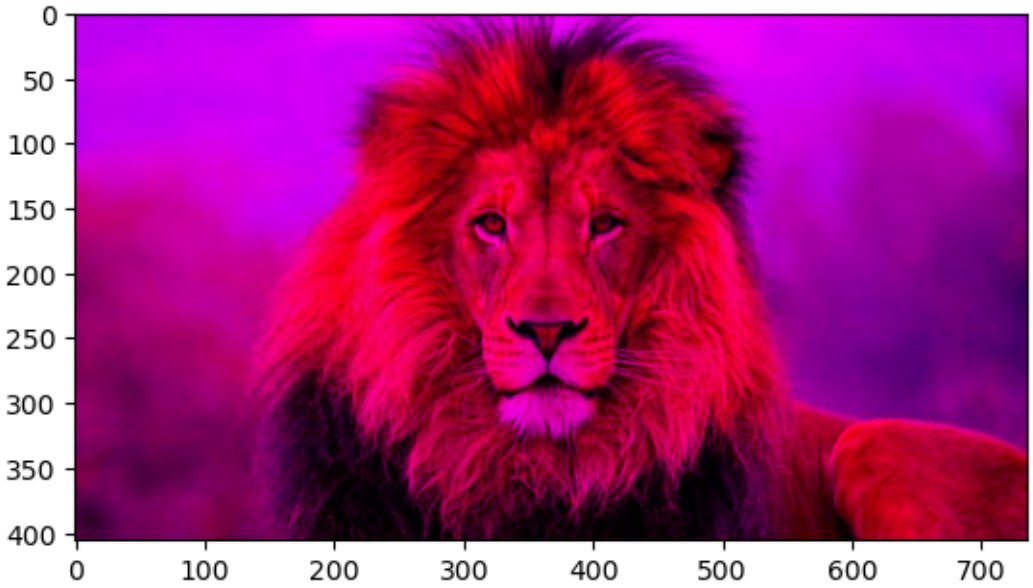
[23]:
```
lion_arr1[:,:,1] = 0
```

[24]:
```
lion_arr1[:,:,1]
```

[24]:
```
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)
```

[25]:
```
plt.imshow(lion_arr1)
```

[25]:
```
<matplotlib.image.AxesImage at 0x2002b9bfda0>
```



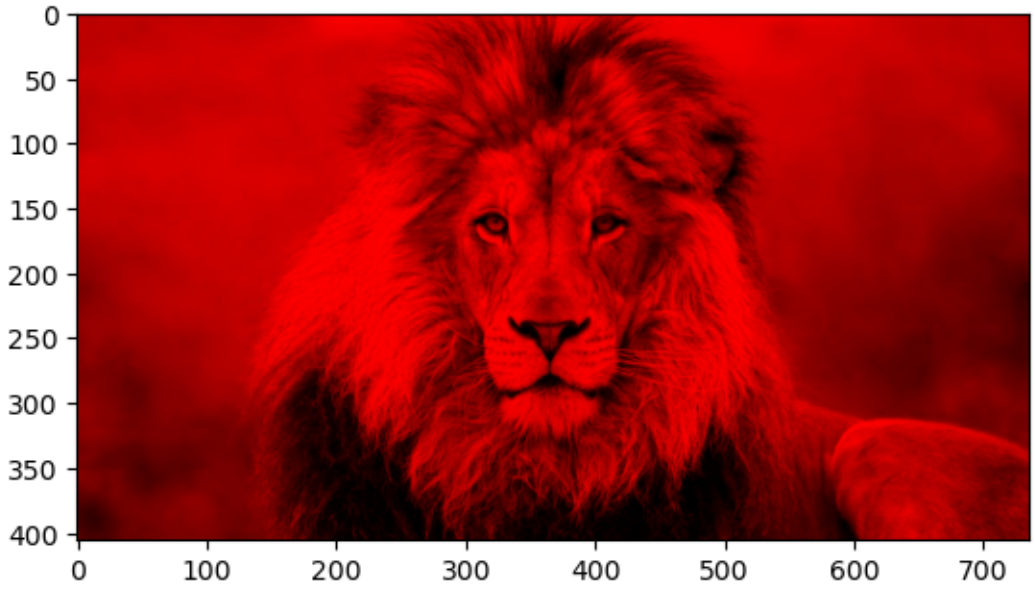
[26]:
```
lion_arr1[:,:,2] = 0
```

[27]:
```
lion_arr1[:,:,2]
```

[27]:
```
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)
```

[28]:
```
plt.imshow(lion_arr1)
```

[28]:
```
<matplotlib.image.AxesImage at 0x2002ba43da0>
```



[29]:
```
lion_arr
```

[29]:
```
array([[[187, 213, 238],
        [188, 214, 239],
        [188, 214, 239],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[188, 214, 239],
        [189, 215, 240],
        [189, 215, 240],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[189, 215, 238],
        [190, 216, 241],
        [190, 216, 241],
        …,
        [179, 210, 228],
        [178, 209, 227],
        [178, 209, 227]],

       …,
```

```
       [[ 86,  89,  68],
        [ 86,  89,  68],
        [ 84,  87,  66],
        …,
        [122,  66,  33],
        [140,  84,  51],
        [147,  91,  58]],

       [[ 88,  91,  70],
        [ 87,  90,  69],
        [ 86,  89,  68],
        …,
        [120,  64,  31],
        [142,  86,  53],
        [152,  96,  63]],

       [[ 89,  92,  71],
        [ 88,  91,  70],
        [ 87,  90,  69],
        …,
        [120,  64,  31],
        [138,  82,  49],
        [153,  97,  64]]], dtype=uint8)
```

[30]:
```
lion_arr1
```

[30]:
```
array([[[187,   0,   0],
        [188,   0,   0],
        [188,   0,   0],
        …,
        [179,   0,   0],
        [179,   0,   0],
        [179,   0,   0]],

       [[188,   0,   0],
        [189,   0,   0],
        [189,   0,   0],
        …,
        [179,   0,   0],
        [179,   0,   0],
        [179,   0,   0]],

       [[189,   0,   0],
        [190,   0,   0],
        [190,   0,   0],
        …,
```

```
        [179,   0,   0],
        [178,   0,   0],
        [178,   0,   0]],

       …,

       [[ 86,   0,   0],
        [ 86,   0,   0],
        [ 84,   0,   0],
        …,
        [122,   0,   0],
        [140,   0,   0],
        [147,   0,   0]],

       [[ 88,   0,   0],
        [ 87,   0,   0],
        [ 86,   0,   0],
        …,
        [120,   0,   0],
        [142,   0,   0],
        [152,   0,   0]],

       [[ 89,   0,   0],
        [ 88,   0,   0],
        [ 87,   0,   0],
        …,
        [120,   0,   0],
        [138,   0,   0],
        [153,   0,   0]]], dtype=uint8)
```

[31]:
```
lion_img
```

[31]:

[32]:
```
arr1 = np.asarray(lion_img)
```

[33]:
```
arr1
```

[33]:
```
array([[[187, 213, 238],
        [188, 214, 239],
        [188, 214, 239],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[188, 214, 239],
        [189, 215, 240],
        [189, 215, 240],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[189, 215, 238],
        [190, 216, 241],
        [190, 216, 241],
        …,
        [179, 210, 228],
        [178, 209, 227],
        [178, 209, 227]],
```

```
       …,

       [[ 86,  89,  68],
        [ 86,  89,  68],
        [ 84,  87,  66],
        …,
        [122,  66,  33],
        [140,  84,  51],
        [147,  91,  58]],

       [[ 88,  91,  70],
        [ 87,  90,  69],
        [ 86,  89,  68],
        …,
        [120,  64,  31],
        [142,  86,  53],
        [152,  96,  63]],

       [[ 89,  92,  71],
        [ 88,  91,  70],
        [ 87,  90,  69],
        …,
        [120,  64,  31],
        [138,  82,  49],
        [153,  97,  64]]], dtype=uint8)
```

[34]:
```
type(arr1)
```

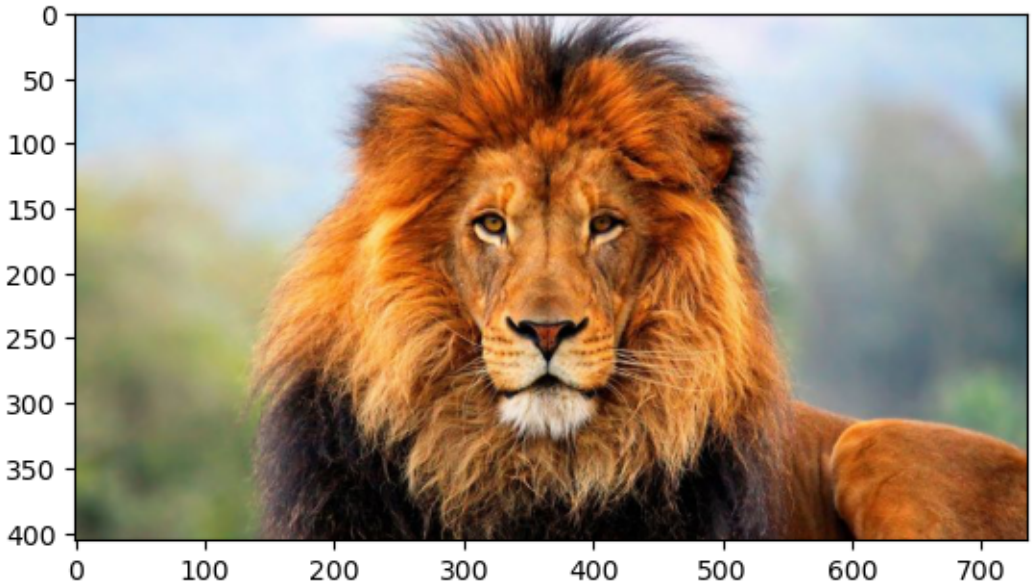
[34]:
```
numpy.ndarray
```

[35]:
```
arr1.shape
```

[35]:
```
(406, 736, 3)
```

[36]:
```
plt.imshow(arr1)
```

[36]:
```
<matplotlib.image.AxesImage at 0x2002cbda3c0>
```



[37]:
```
lion_img1 = arr1.copy()
```

[38]:
```
lion_img1
```

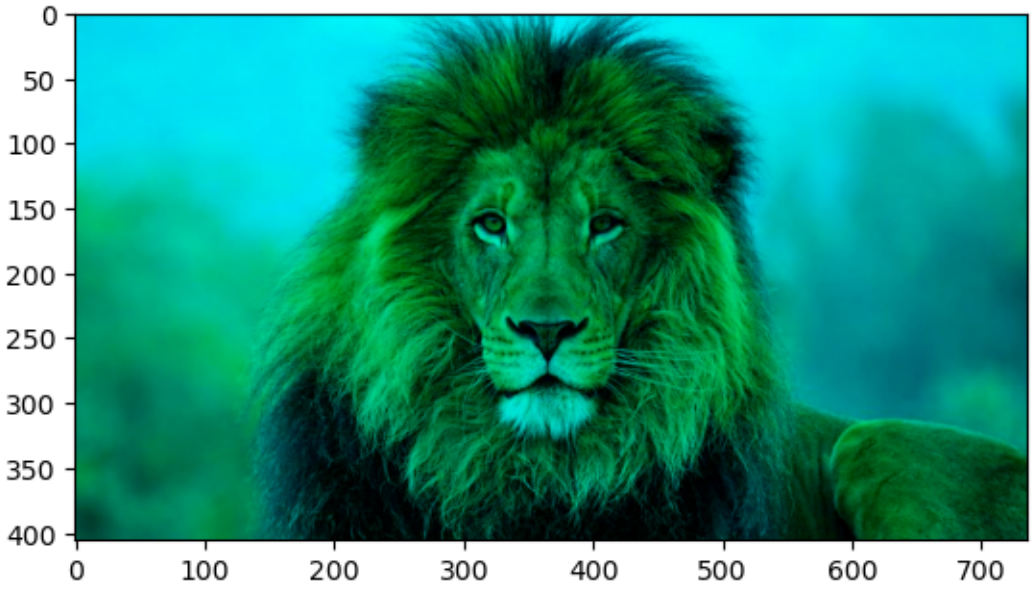
[38]:
```
array([[[187, 213, 238],
        [188, 214, 239],
        [188, 214, 239],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[188, 214, 239],
        [189, 215, 240],
        [189, 215, 240],
        …,
        [179, 210, 228],
        [179, 210, 228],
        [179, 210, 228]],

       [[189, 215, 238],
        [190, 216, 241],
        [190, 216, 241],
        …,
        [179, 210, 228],
        [178, 209, 227],
        [178, 209, 227]],
```

```
       …,

       [[ 86,  89,  68],
        [ 86,  89,  68],
        [ 84,  87,  66],
        …,
        [122,  66,  33],
        [140,  84,  51],
        [147,  91,  58]],

       [[ 88,  91,  70],
        [ 87,  90,  69],
        [ 86,  89,  68],
        …,
        [120,  64,  31],
        [142,  86,  53],
        [152,  96,  63]],

       [[ 89,  92,  71],
        [ 88,  91,  70],
        [ 87,  90,  69],
        …,
        [120,  64,  31],
        [138,  82,  49],
        [153,  97,  64]]], dtype=uint8)
```

[39]:
```
lion_img1[:,:,0] = 0
```

[40]:
```
plt.imshow(lion_img1)
```

[40]:
```
<matplotlib.image.AxesImage at 0x2002cc36750>
```



[41]:
```
lion_img1[:,:,1]
```

[41]:
```
array([[213, 214, 214, …, 210, 210, 210],
       [214, 215, 215, …, 210, 210, 210],
       [215, 216, 216, …, 210, 209, 209],
       …,
       [ 89,  89,  87, …,  66,  84,  91],
       [ 91,  90,  89, …,  64,  86,  96],
       [ 92,  91,  90, …,  64,  82,  97]], dtype=uint8)
```

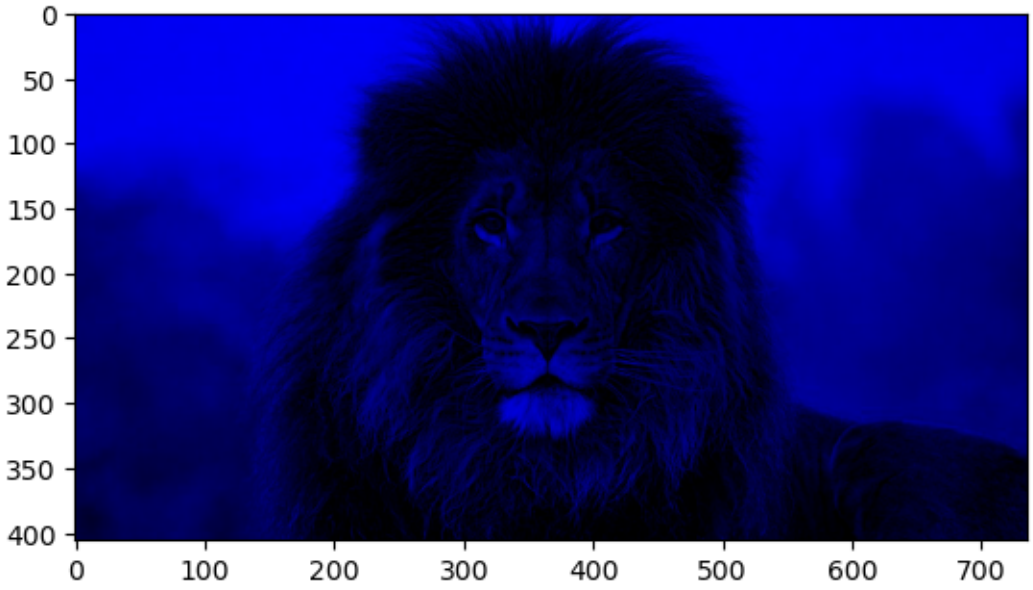
[42]:
```
lion_img1[:,:,1] = 0
```

[43]:
```
lion_img1[:,:,1]
```

[43]:
```
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)
```

[45]:
```
plt.imshow(lion_img1)
```

[45]:
```
<matplotlib.image.AxesImage at 0x2002ccd2810>
```



completed