

```
In [60]: import numpy as np
```

```
In [61]: ones_arr=np.ones((5,5))
ones_arr
```

```
Out[61]: 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 [62]: ones_arr=np.ones((5,5),dtype=int)
ones_arr
```

```
Out[62]: 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 [63]: zeros_arr=np.zeros((5,5),dtype=int)
zeros_arr
```

```
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]])
```

```
In [64]: ones_arr * 255
```

```
Out[64]: 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 [65]: import matplotlib.pyplot as plt
```

```
In [66]: %matplotlib inline
```

```
In [67]: from PIL import Image
```

```
In [68]: img=Image.open(r'C:\Users\HAI\Downloads\Python\horse.jpeg')
img
```

Out[68]:

In [69]: `type(img)`Out[69]: `PIL.JpegImagePlugin.JpegImageFile`In [70]: `img_arr=np.asarray(img)`
`img_arr`

```
Out[70]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

```
In [71]: type(img_arr)
```

```
Out[71]: numpy.ndarray
```

```
In [72]: img_arr.shape
```

```
Out[72]: (2334, 3502, 3)
```

```
In [73]: plt.imshow(img_arr)
plt.show()
```



```
In [74]: img_red=img_arr.copy()
```

```
In [75]: img_red
```

```
Out[75]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

```
In [76]: img_arr == img_red
```

```
Out[76]: 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]],

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

```
In [77]: plt.imshow(img_red)
plt.show()
```



```
In [78]: img_red.shape
```

```
Out[78]: (2334, 3502, 3)
```

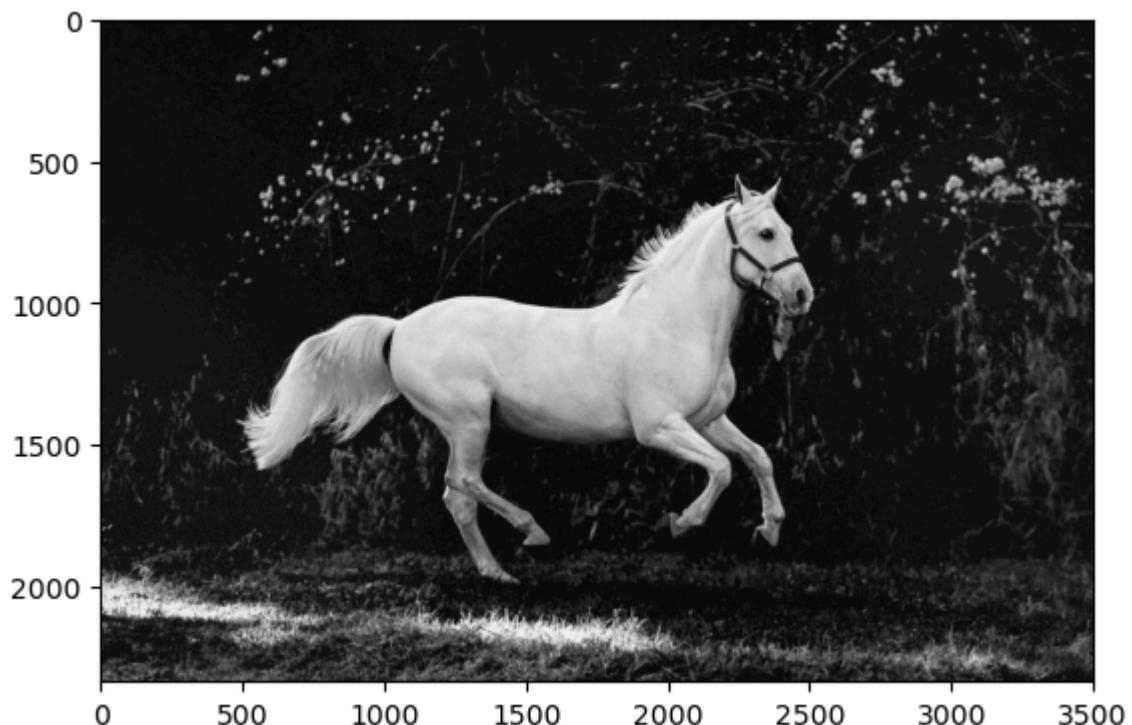
```
In [79]: plt.imshow(img_arr[:, :, 0])
plt.show()
```



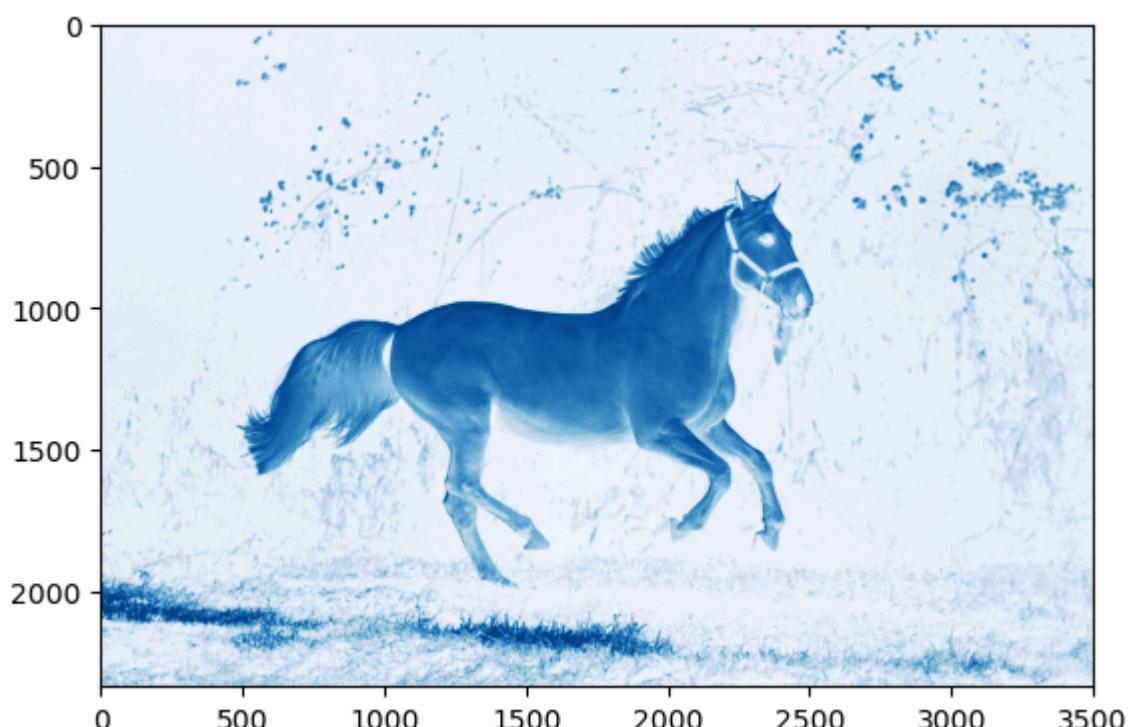
```
In [80]: img_arr[:, :, 0]
```

```
Out[80]: array([[15, 15, 15, ..., 25, 19, 14],  
                 [15, 15, 15, ..., 26, 22, 20],  
                 [15, 15, 15, ..., 28, 25, 24],  
                 ...,  
                 [49, 40, 35, ..., 14, 13, 12],  
                 [45, 38, 31, ..., 11, 12, 16],  
                 [31, 31, 32, ..., 14, 16, 23]], dtype=uint8)
```

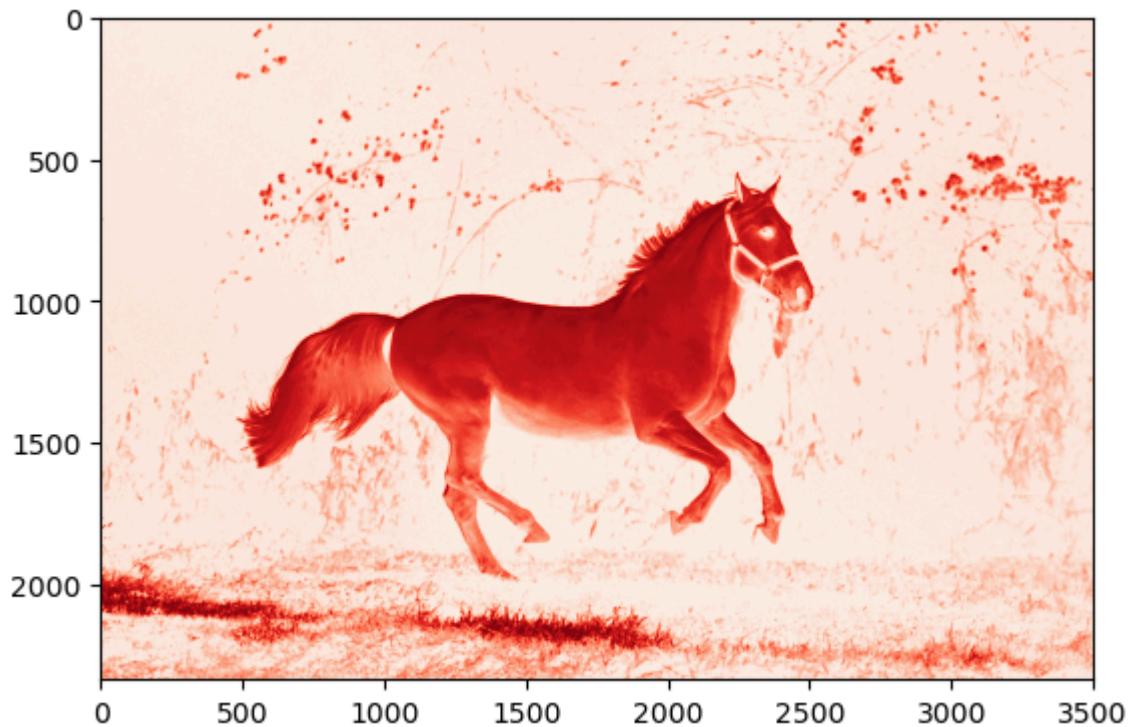
```
In [81]: plt.imshow(img_arr[:, :, 0], cmap='gray')  
plt.show()
```



```
In [82]: plt.imshow(img_arr[:, :, 0], cmap='Blues')  
plt.show()
```



```
In [83]: plt.imshow(img_arr[:, :, 0], cmap='Reds')
plt.show()
```



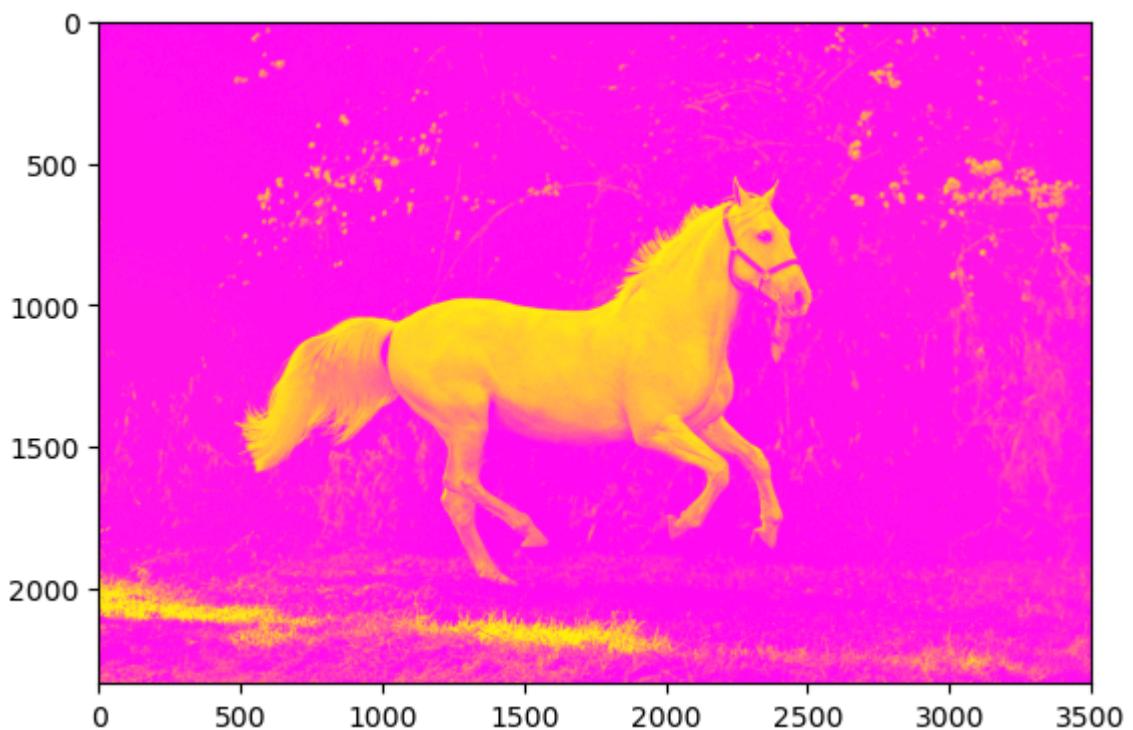
```
In [84]: plt.imshow(img_arr[:, :, 0], cmap='PuBu')
plt.show()
```



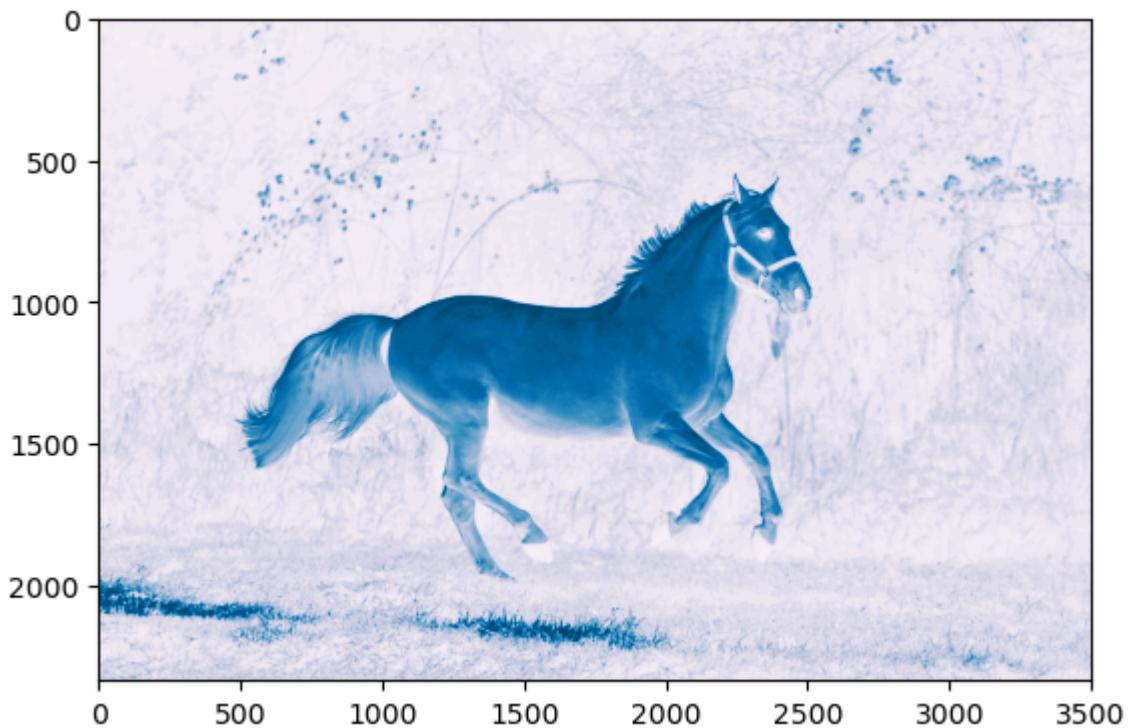
```
In [85]: plt.imshow(img_arr[:, :, 0], cmap='Grays')
plt.show()
```



```
In [86]: plt.imshow(img_arr[:, :, 0], cmap='spring')
plt.show()
```



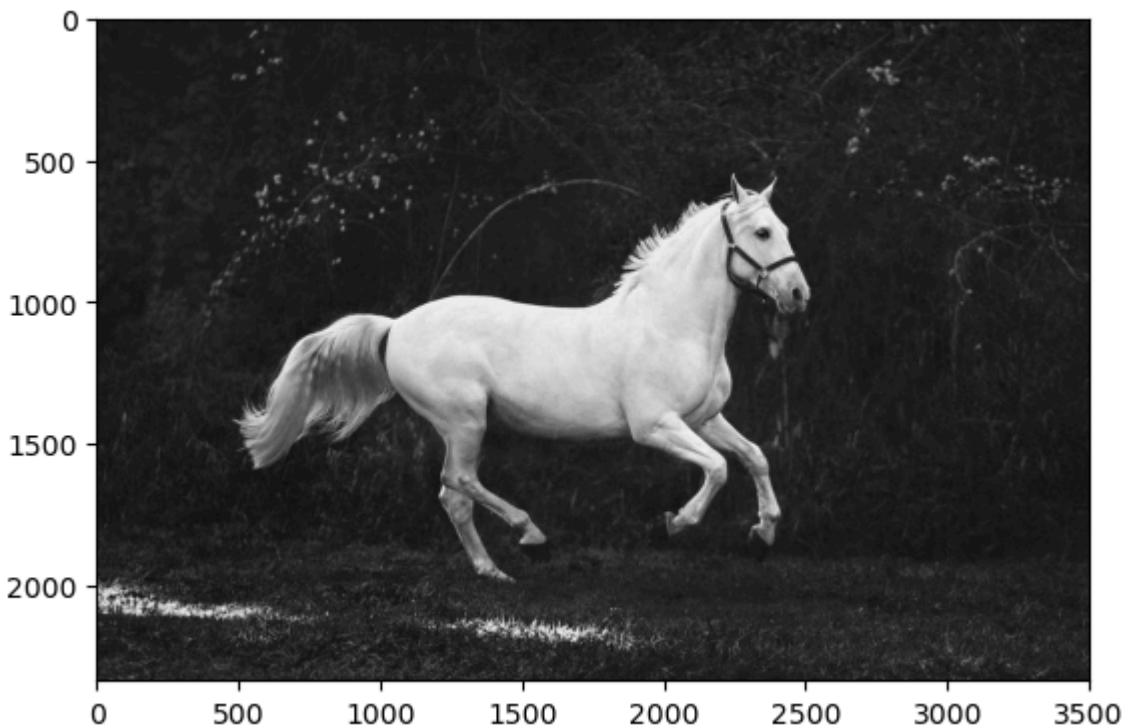
```
In [87]: plt.imshow(img_arr[:, :, 1], cmap='PuBu')
plt.show()
```



```
In [88]: plt.imshow(img_arr[:, :, 1], cmap='gray')
plt.show()
```



```
In [89]: plt.imshow(img_arr[:, :, 2], cmap='gray')
plt.show()
```



```
In [90]: img_arr = np.asarray(img).copy()
```

```
In [91]: img_arr[:, :, 0]
```

```
Out[91]: array([[15, 15, 15, ..., 25, 19, 14],  
                 [15, 15, 15, ..., 26, 22, 20],  
                 [15, 15, 15, ..., 28, 25, 24],  
                 ...,  
                 [49, 40, 35, ..., 14, 13, 12],  
                 [45, 38, 31, ..., 11, 12, 16],  
                 [31, 31, 32, ..., 14, 16, 23]], dtype=uint8)
```

```
In [92]: img_arr[:, :, 1]
```

```
Out[92]: array([[17, 17, 17, ..., 37, 34, 30],  
                 [17, 17, 17, ..., 38, 37, 36],  
                 [17, 17, 17, ..., 40, 40, 40],  
                 ...,  
                 [50, 41, 35, ..., 30, 25, 22],  
                 [50, 43, 36, ..., 25, 24, 26],  
                 [41, 41, 39, ..., 26, 26, 31]], dtype=uint8)
```

```
In [93]: img_arr[:, :, 2]
```

```
Out[93]: array([[29, 29, 29, ..., 35, 31, 27],  
                 [29, 29, 29, ..., 36, 34, 33],  
                 [29, 29, 29, ..., 38, 37, 37],  
                 ...,  
                 [44, 35, 27, ..., 29, 25, 23],  
                 [44, 37, 30, ..., 25, 24, 27],  
                 [33, 33, 32, ..., 26, 27, 33]], dtype=uint8)
```

```
In [94]: img_arr[:, :, 0] = 0
```

```
In [95]: img_arr[:, :, 0]
```

```
Out[95]: 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 [96]: plt.imshow(img_arr)  
plt.show()
```



```
In [97]: img_arr[:, :, 1] = 0
```

```
In [98]: img_arr[:, :, 1]
```

```
Out[98]: 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 [99]: plt.imshow(img_arr)  
plt.show()
```



In [100]:

```
arr1 = np.asarray(img)
arr1
```

```
Out[100... array([[[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [25, 37, 35],  
                   [19, 34, 31],  
                   [14, 30, 27]],  
  
                  [[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [26, 38, 36],  
                   [22, 37, 34],  
                   [20, 36, 33]],  
  
                  [[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [28, 40, 38],  
                   [25, 40, 37],  
                   [24, 40, 37]],  
  
                  ...,  
  
                  [[49, 50, 44],  
                   [40, 41, 35],  
                   [35, 35, 27],  
                   ...,  
                   [14, 30, 29],  
                   [13, 25, 25],  
                   [12, 22, 23]],  
  
                  [[45, 50, 44],  
                   [38, 43, 37],  
                   [31, 36, 30],  
                   ...,  
                   [11, 25, 25],  
                   [12, 24, 24],  
                   [16, 26, 27]],  
  
                  [[31, 41, 33],  
                   [31, 41, 33],  
                   [32, 39, 32],  
                   ...,  
                   [14, 26, 26],  
                   [16, 26, 27],  
                   [23, 31, 33]]], dtype=uint8)
```

```
In [101... type(arr1)
```

```
Out[101... numpy.ndarray
```

```
In [102... arr1.shape
```

```
Out[102... (2334, 3502, 3)
```

In [103...]

```
plt.imshow(arr1)  
plt.show()
```



In [104...]

```
img1=arr1.copy()  
img1
```

```
Out[104... array([[[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [25, 37, 35],  
                   [19, 34, 31],  
                   [14, 30, 27]],  
  
                  [[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [26, 38, 36],  
                   [22, 37, 34],  
                   [20, 36, 33]],  
  
                  [[15, 17, 29],  
                   [15, 17, 29],  
                   [15, 17, 29],  
                   ...,  
                   [28, 40, 38],  
                   [25, 40, 37],  
                   [24, 40, 37]],  
  
                  ...,  
  
                  [[49, 50, 44],  
                   [40, 41, 35],  
                   [35, 35, 27],  
                   ...,  
                   [14, 30, 29],  
                   [13, 25, 25],  
                   [12, 22, 23]],  
  
                  [[45, 50, 44],  
                   [38, 43, 37],  
                   [31, 36, 30],  
                   ...,  
                   [11, 25, 25],  
                   [12, 24, 24],  
                   [16, 26, 27]],  
  
                  [[31, 41, 33],  
                   [31, 41, 33],  
                   [32, 39, 32],  
                   ...,  
                   [14, 26, 26],  
                   [16, 26, 27],  
                   [23, 31, 33]]], dtype=uint8)
```

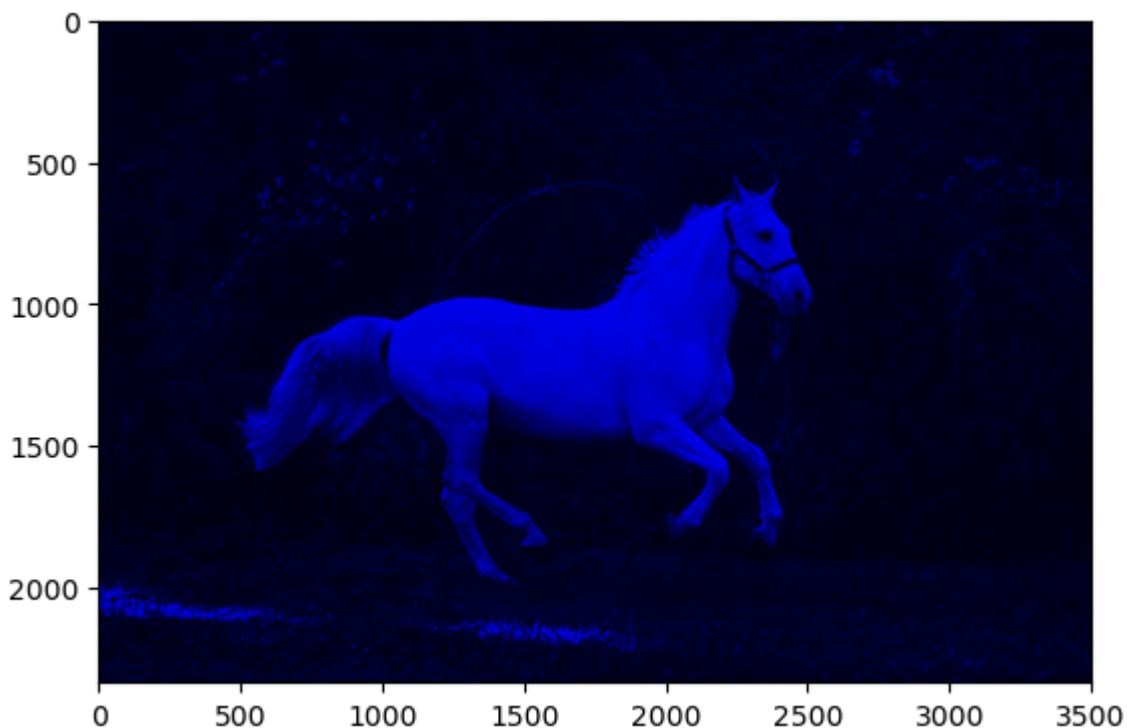
```
In [105... img1[:, :, 0] = 0
```

```
In [106... plt.imshow(img1)  
plt.show()
```



```
In [107]: img1[:, :, 1] = 0
```

```
In [108]: plt.imshow(img1)  
plt.show()
```



```
In [109]: img_arr[:, :, 1]
```

```
Out[109]: 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 [110]: img_arr[:, :, 1] = 0
```

```
In [111]: plt.imshow(img1)  
plt.show()
```



```
In [ ]:
```

In []:

In []: