

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

```
In [3]: import matplotlib.pyplot as plt
```

```
In [5]: matplotlib inline
```

```
In [9]: from PIL import Image
```

```
In [11]: horse_img = Image.open(r"C:\Users\arpan\OneDrive\Pictures\horse.jpg")
```

```
In [13]: horse_img
```

```
Out[13]:
```



```
In [15]: type(horse_img)
```

```
Out[15]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [19]: horse_arr1 = np.asarray(horse_img)
horse_arr1
```

```
Out[19]: 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 [21]: type(horse_arr1)
```

```
Out[21]: numpy.ndarray
```

```
In [27]: plt.imshow(horse_arr1)  
plt.show()
```



```
In [29]: horse_arr1.shape
```

```
Out[29]: (2334, 3502, 3)
```

```
In [31]: horse_red = horse_arr1.copy()
```

```
In [33]: horse_red == horse_arr1
```

```
Out[33]: 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 [35]: horse_red
```

```
Out[35]: 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)
```

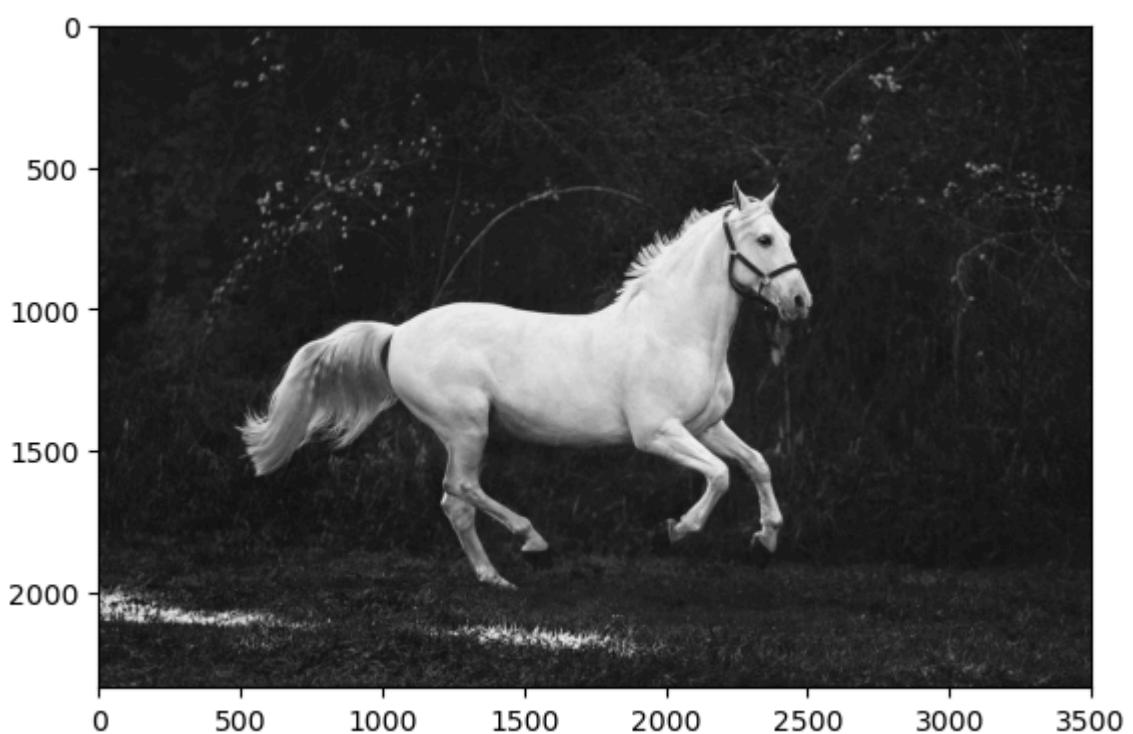
```
In [37]: horse_red.shape
```

```
Out[37]: (2334, 3502, 3)
```

```
In [39]: plt.imshow(horse_red[:, :, 2])  
plt.show()
```



```
In [43]: plt.imshow(horse_red[:, :, 2], cmap='grey')
plt.show()
```



```
In [ ]:
```