

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

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

```
In [3]: %matplotlib inline
```

```
In [4]: from PIL import Image
```

```
In [12]: snake_img = Image.open(r"C:\Users\harisai\OneDrive\Desktop\sai\snake 1.jpg")
```

```
In [14]: Image
```

```
Out[14]: <module 'PIL.Image' from 'C:\\Users\\harisai\\anaconda3\\Lib\\site-packages\\PIL\\Image.py'>
```

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

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

```
In [26]: snake_arr = np.asarray(snake_img)  
snake_arr
```

```

Out[26]: array([[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [139, 163, 69]],

              [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

              [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

              ...,

              [[124, 144, 59],
               [124, 144, 59],
               [124, 144, 59],
               ...,
               [119, 107, 69],
               [118, 105, 70],
               [116, 103, 69]],

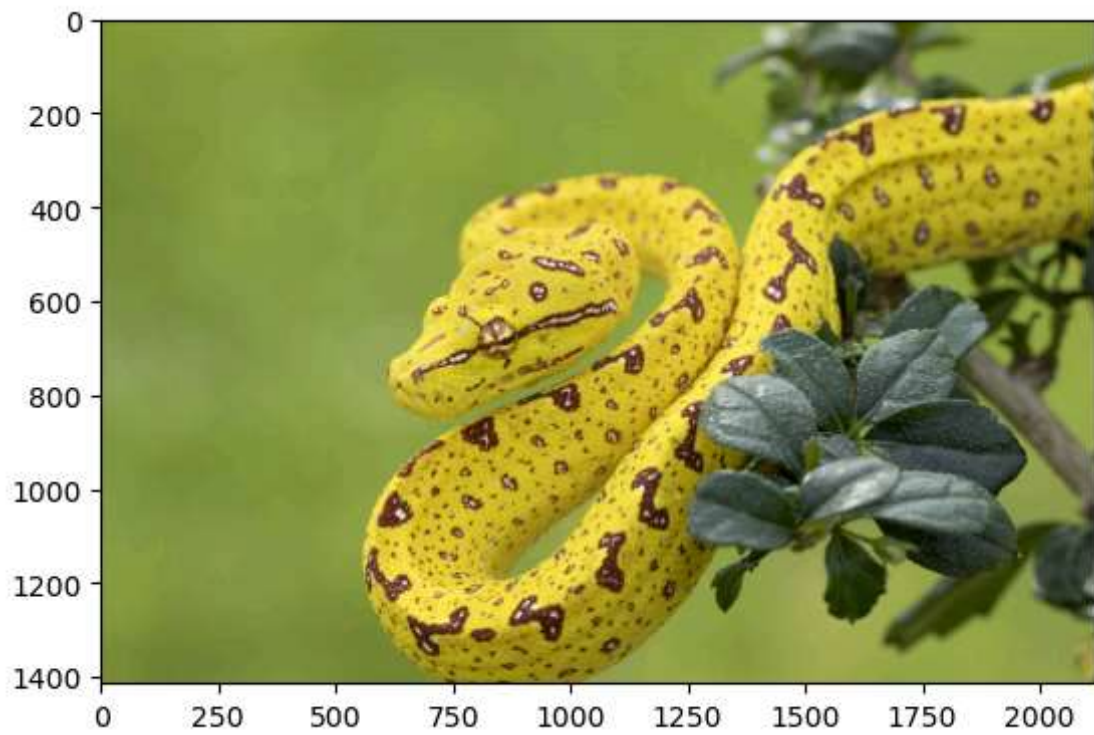
              [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [119, 106, 71],
               [118, 105, 71],
               [119, 106, 74]],

              [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [120, 107, 73],
               [119, 106, 74],
               [119, 108, 78]]], dtype=uint8)

```

```
In [18]: plt.imshow(snake_img)
```

```
Out[18]: <matplotlib.image.AxesImage at 0x2a36f8e4350>
```



```
In [27]: type(snake_arr)
```

```
Out[27]: numpy.ndarray
```

```
In [28]: snake_arr.shape
```

```
Out[28]: (1414, 2121, 3)
```

```
In [31]: snake_red = snake_arr.copy()  
snake_red
```

```

Out[31]: array([[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [139, 163, 69]],

               [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

               [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

               ...,

               [[124, 144, 59],
               [124, 144, 59],
               [124, 144, 59],
               ...,
               [119, 107, 69],
               [118, 105, 70],
               [116, 103, 69]],

               [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [119, 106, 71],
               [118, 105, 71],
               [119, 106, 74]],

               [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [120, 107, 73],
               [119, 106, 74],
               [119, 108, 78]]], dtype=uint8)

```

```

In [32]: ones_arr = np.ones((5,5))
         ones_arr

```

```

Out[32]: 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 [33]: ones_arr = np.ones((5,5),dtype=int)
ones_arr
```

```
Out[33]: 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 [34]: zeros_arr = np.zeros((3,3),dtype=int)
zeros_arr
```

```
Out[34]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [35]: zeros_arr = np.zeros((3,3),dtype=int)
zeros_arr
```

```
Out[35]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [36]: ones_arr*255
```

```
Out[36]: 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 [37]: snake_red == snake_img
```

```

Out[37]: 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]],

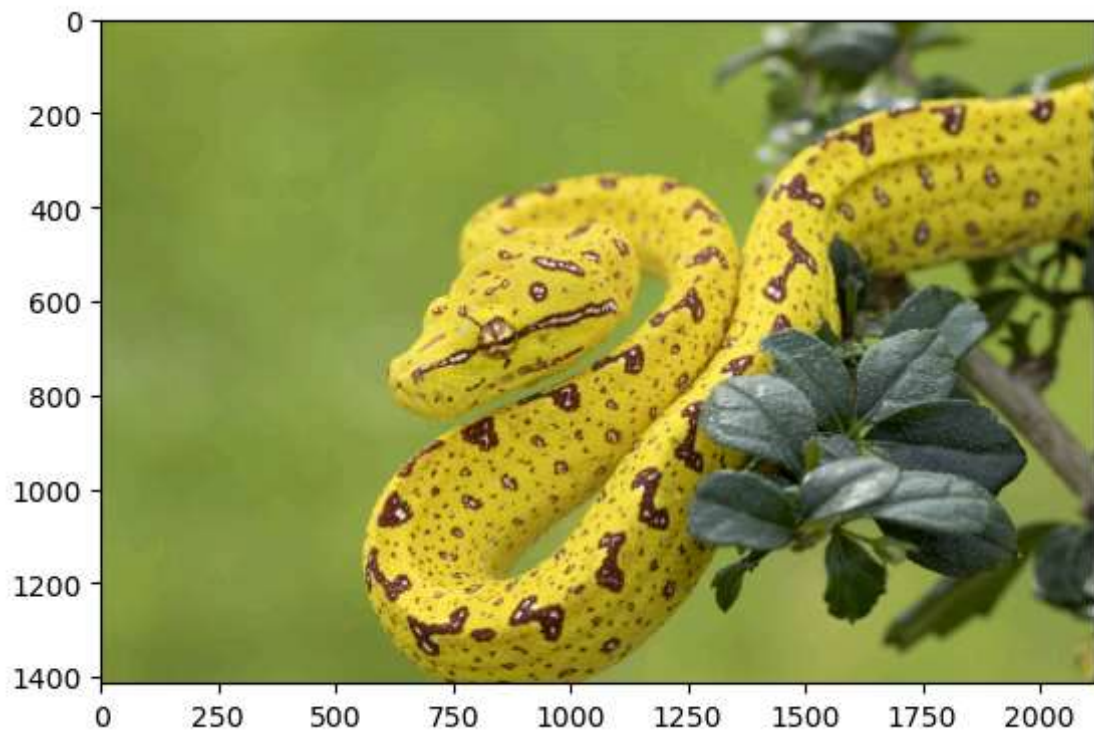
              [[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True],
               ...,
               [ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]],

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

```

```
In [39]: plt.imshow(snake_red)
```

```
Out[39]: <matplotlib.image.AxesImage at 0x2a374523d10>
```

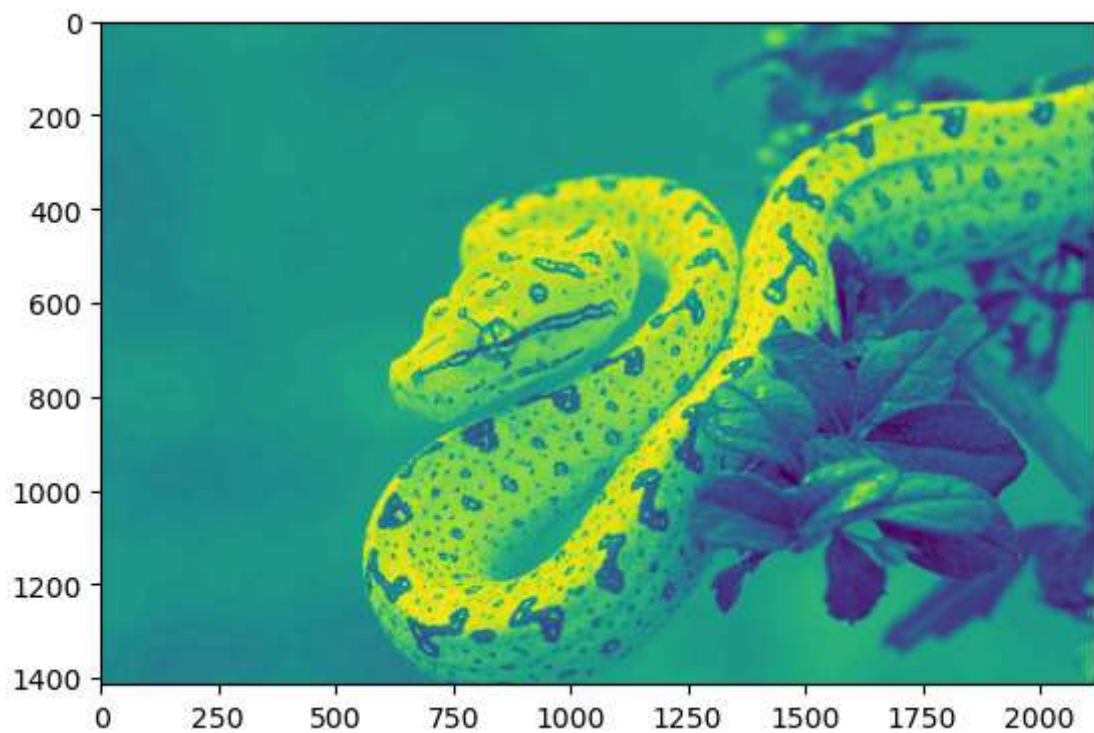


```
In [40]: snake_red.shape
```

```
Out[40]: (1414, 2121, 3)
```

```
In [41]: plt.imshow(snake_red[:, :, 0])
```

```
Out[41]: <matplotlib.image.AxesImage at 0x2a377ac6b10>
```

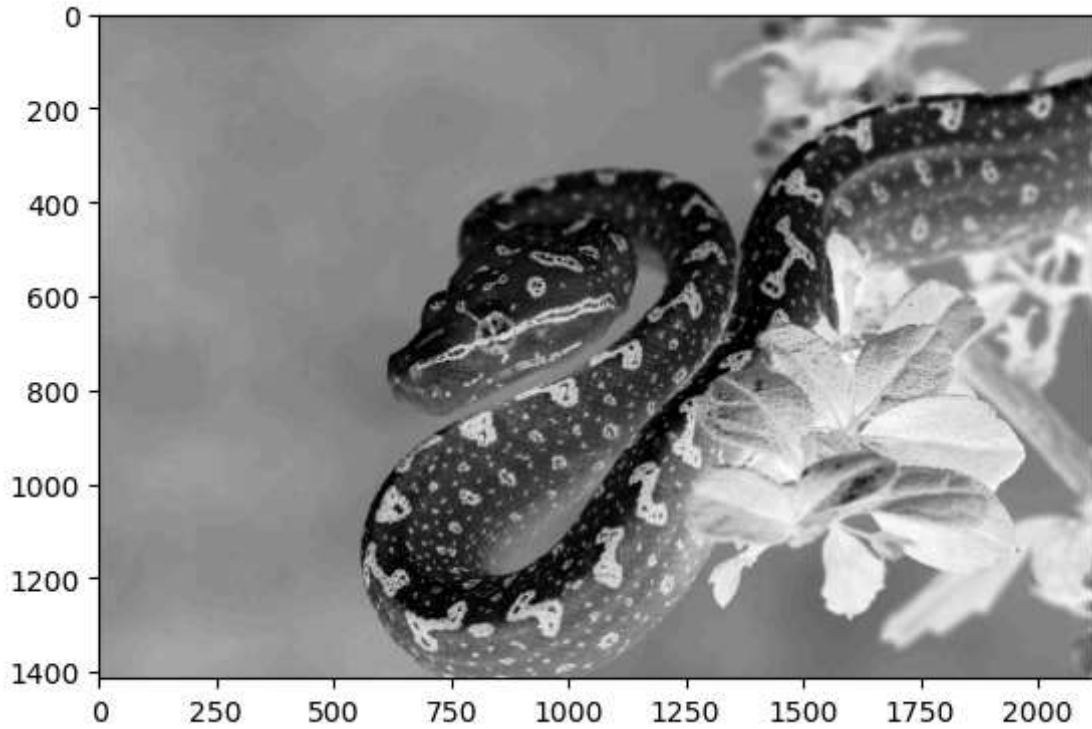


```
In [42]: snake_red[:, :, 0]
```

```
Out[42]: array([[133, 133, 133, ..., 140, 140, 139],
               [133, 133, 133, ..., 140, 140, 141],
               [133, 133, 133, ..., 140, 140, 141],
               ...,
               [124, 124, 124, ..., 119, 118, 116],
               [123, 123, 123, ..., 119, 118, 119],
               [123, 123, 123, ..., 120, 119, 119]], dtype=uint8)
```

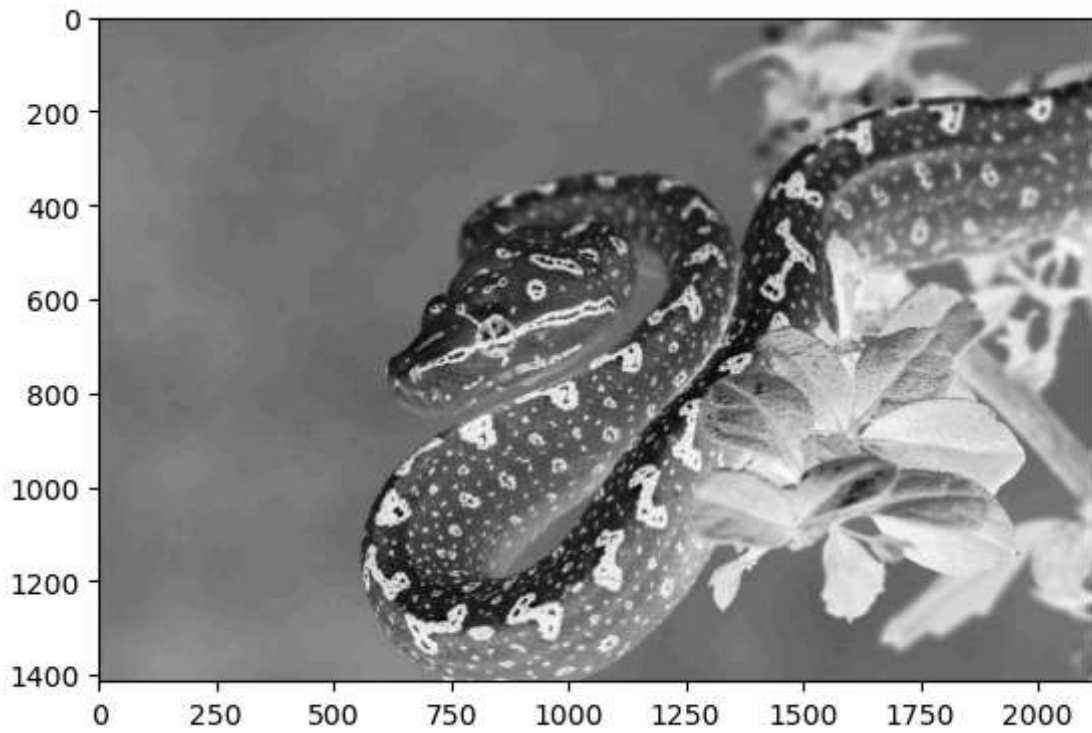
```
In [43]: plt.imshow(snake_red[:, :, 0], cmap='Greys')
```

```
Out[43]: <matplotlib.image.AxesImage at 0x2a377ade9c0>
```



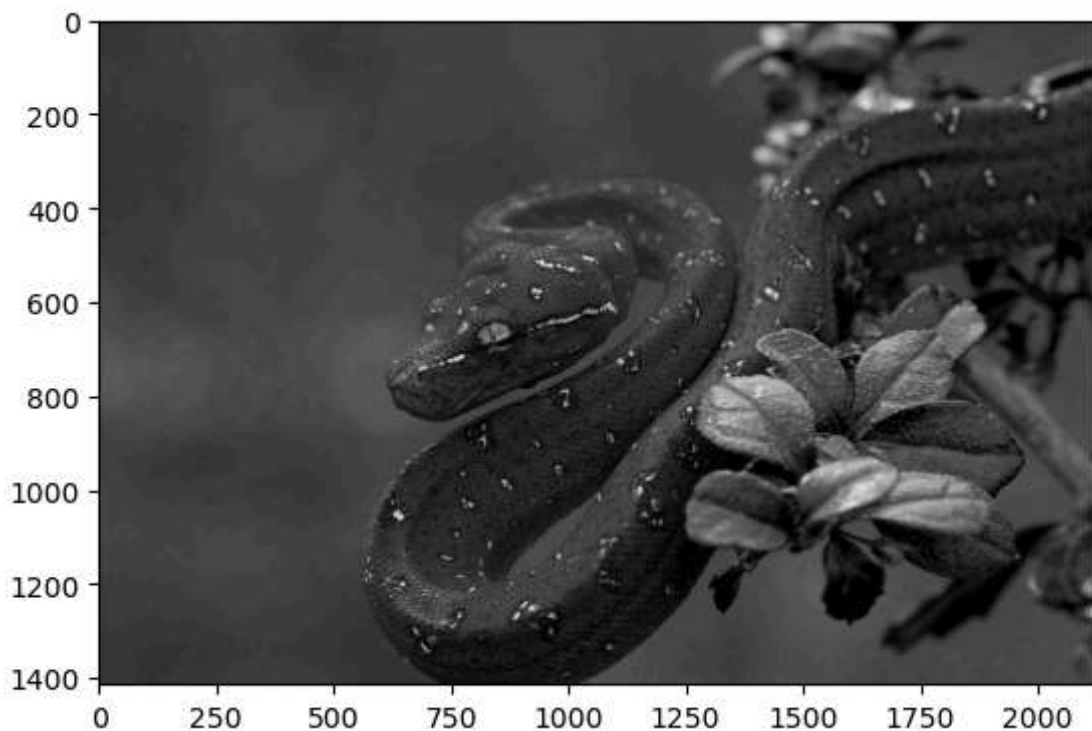
```
In [44]: plt.imshow(snake_red[:, :, 1], cmap = 'Greys')
```

```
Out[44]: <matplotlib.image.AxesImage at 0x2a377ac6300>
```

```
In [45]: plt.imshow(snake_red[:, :, 2], cmap = 'grey')
```

```
Out[45]: <matplotlib.image.AxesImage at 0x2a37818ab40>
```



```
In [46]: snake_red[:, :, 0]
```

```
Out[46]: array([[133, 133, 133, ..., 140, 140, 139],
                [133, 133, 133, ..., 140, 140, 141],
                [133, 133, 133, ..., 140, 140, 141],
                ...,
                [124, 124, 124, ..., 119, 118, 116],
                [123, 123, 123, ..., 119, 118, 119],
                [123, 123, 123, ..., 120, 119, 119]], dtype=uint8)
```

```
In [47]: snake_red[:, :, 1]
```

```
Out[47]: array([[155, 155, 155, ..., 164, 164, 163],
                [155, 155, 155, ..., 164, 164, 165],
                [155, 155, 155, ..., 164, 164, 165],
                ...,
                [144, 144, 144, ..., 107, 105, 103],
                [143, 143, 143, ..., 106, 105, 106],
                [143, 143, 143, ..., 107, 106, 108]], dtype=uint8)
```

```
In [48]: snake_red[:, :, 2]
```

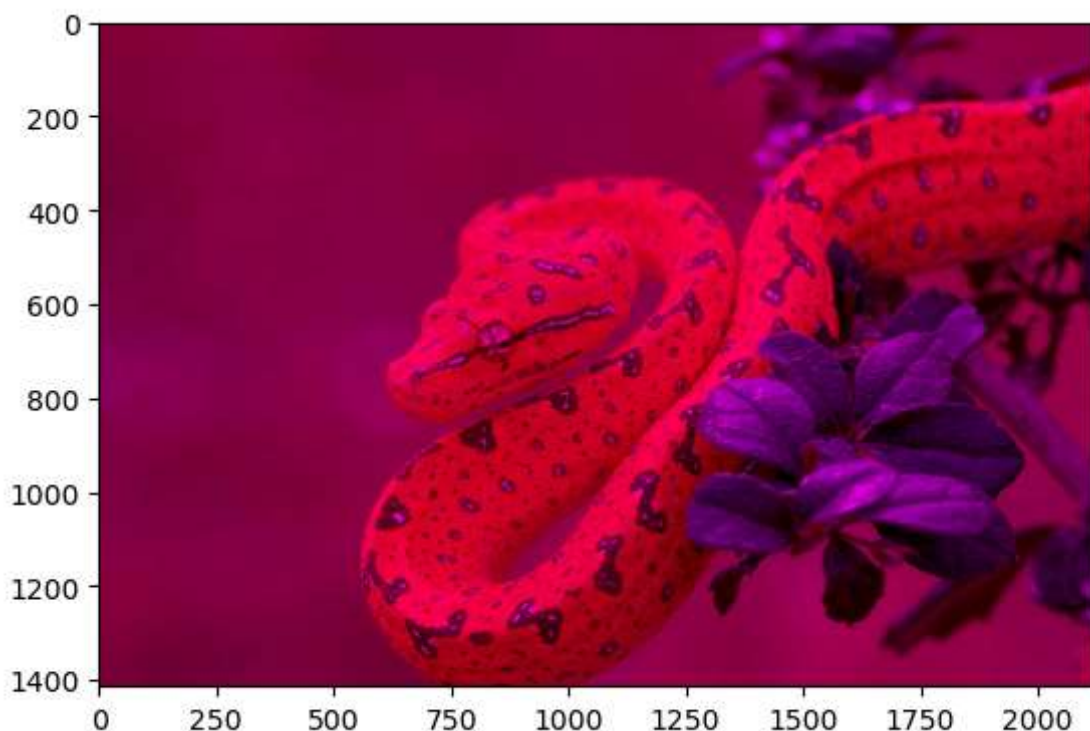
```
Out[48]: array([[57, 57, 57, ..., 70, 70, 69],
                [57, 57, 57, ..., 70, 70, 71],
                [57, 57, 57, ..., 70, 70, 71],
                ...,
                [59, 59, 59, ..., 69, 70, 69],
                [58, 58, 58, ..., 71, 71, 74],
                [58, 58, 58, ..., 73, 74, 78]], dtype=uint8)
```

```
In [49]: snake_red[:, :, 1] = 0
         snake_red[:, :, 1]
```

```
Out[49]: 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 [50]: plt.imshow(snake_red)
```

```
Out[50]: <matplotlib.image.AxesImage at 0x2a3781a6a80>
```



```
In [51]: snake_red[:, :, 2]
```

```
Out[51]: array([[57, 57, 57, ..., 70, 70, 69],
               [57, 57, 57, ..., 70, 70, 71],
               [57, 57, 57, ..., 70, 70, 71],
               ...,
               [59, 59, 59, ..., 69, 70, 69],
               [58, 58, 58, ..., 71, 71, 74],
               [58, 58, 58, ..., 73, 74, 78]], dtype=uint8)
```

```
In [52]: snake_red[:, :, 2] = 0
snake_red
```

```

Out[52]: array([[133,  0,  0],
                [133,  0,  0],
                [133,  0,  0],
                ...,
                [140,  0,  0],
                [140,  0,  0],
                [139,  0,  0]],

               [[133,  0,  0],
                [133,  0,  0],
                [133,  0,  0],
                ...,
                [140,  0,  0],
                [140,  0,  0],
                [141,  0,  0]],

               [[133,  0,  0],
                [133,  0,  0],
                [133,  0,  0],
                ...,
                [140,  0,  0],
                [140,  0,  0],
                [141,  0,  0]],

               ...,

               [[124,  0,  0],
                [124,  0,  0],
                [124,  0,  0],
                ...,
                [119,  0,  0],
                [118,  0,  0],
                [116,  0,  0]],

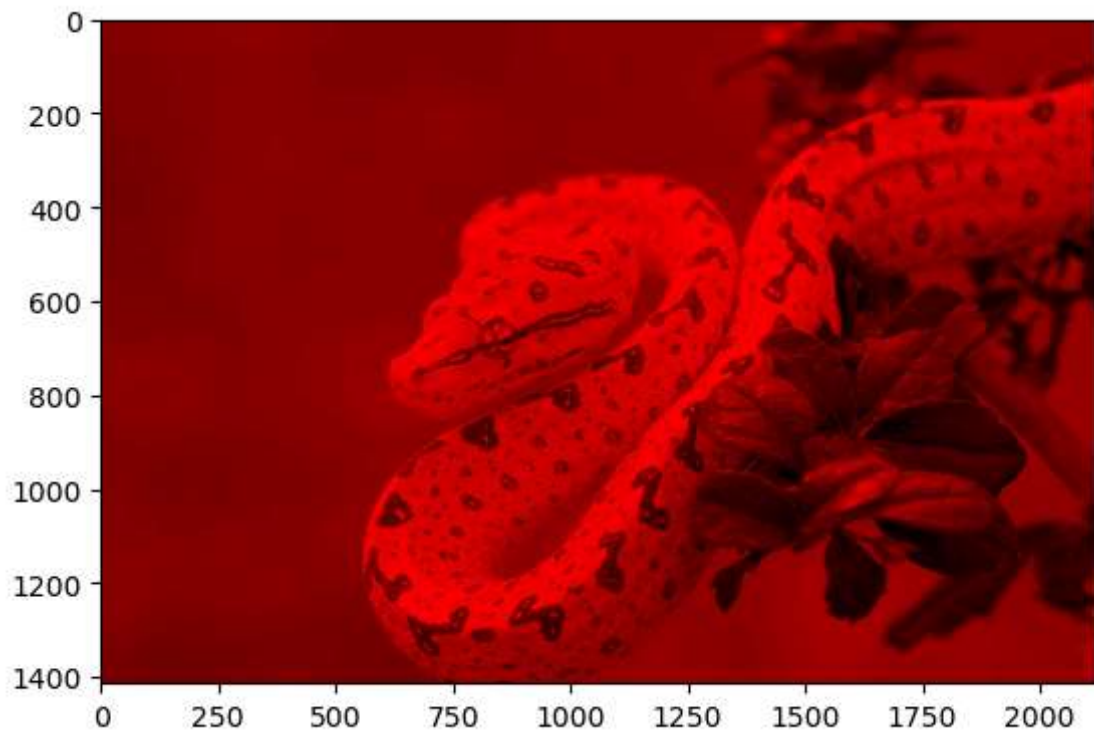
               [[123,  0,  0],
                [123,  0,  0],
                [123,  0,  0],
                ...,
                [119,  0,  0],
                [118,  0,  0],
                [119,  0,  0]],

               [[123,  0,  0],
                [123,  0,  0],
                [123,  0,  0],
                ...,
                [120,  0,  0],
                [119,  0,  0],
                [119,  0,  0]]], dtype=uint8)

```

```
In [53]: plt.imshow(snake_red)
```

```
Out[53]: <matplotlib.image.AxesImage at 0x2a37823ae70>
```



```
In [54]: snake_img
```

```
Out[54]:
```



```
In [55]: arr1 = np.asarray(snake_img)
arr1
```

```
Out[55]: array([[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [139, 163, 69]],

              [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

              [[133, 155, 57],
               [133, 155, 57],
               [133, 155, 57],
               ...,
               [140, 164, 70],
               [140, 164, 70],
               [141, 165, 71]],

              ...,

              [[124, 144, 59],
               [124, 144, 59],
               [124, 144, 59],
               ...,
               [119, 107, 69],
               [118, 105, 70],
               [116, 103, 69]],

              [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [119, 106, 71],
               [118, 105, 71],
               [119, 106, 74]],

              [[123, 143, 58],
               [123, 143, 58],
               [123, 143, 58],
               ...,
               [120, 107, 73],
               [119, 106, 74],
               [119, 108, 78]]], dtype=uint8)
```

```
In [56]: type(arr1)
```

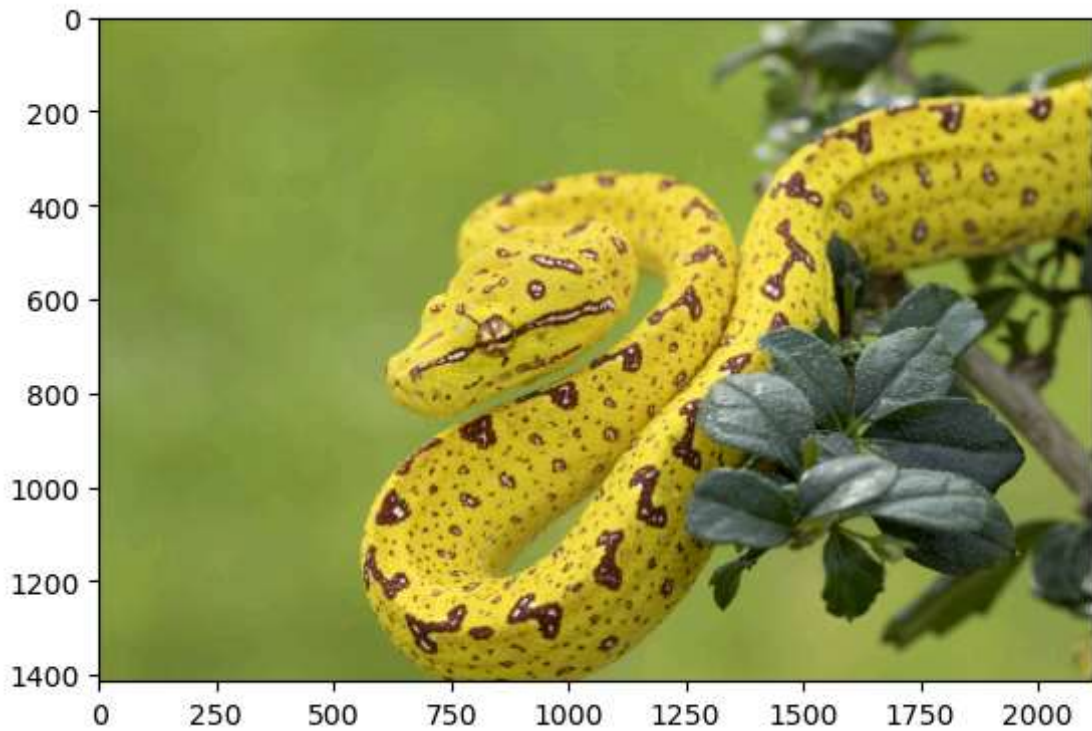
```
Out[56]: numpy.ndarray
```

```
In [57]: arr1.shape
```

```
Out[57]: (1414, 2121, 3)
```

```
In [58]: plt.imshow(arr1)
```


Out[58]: <matplotlib.image.AxesImage at 0x2a3781ce930>

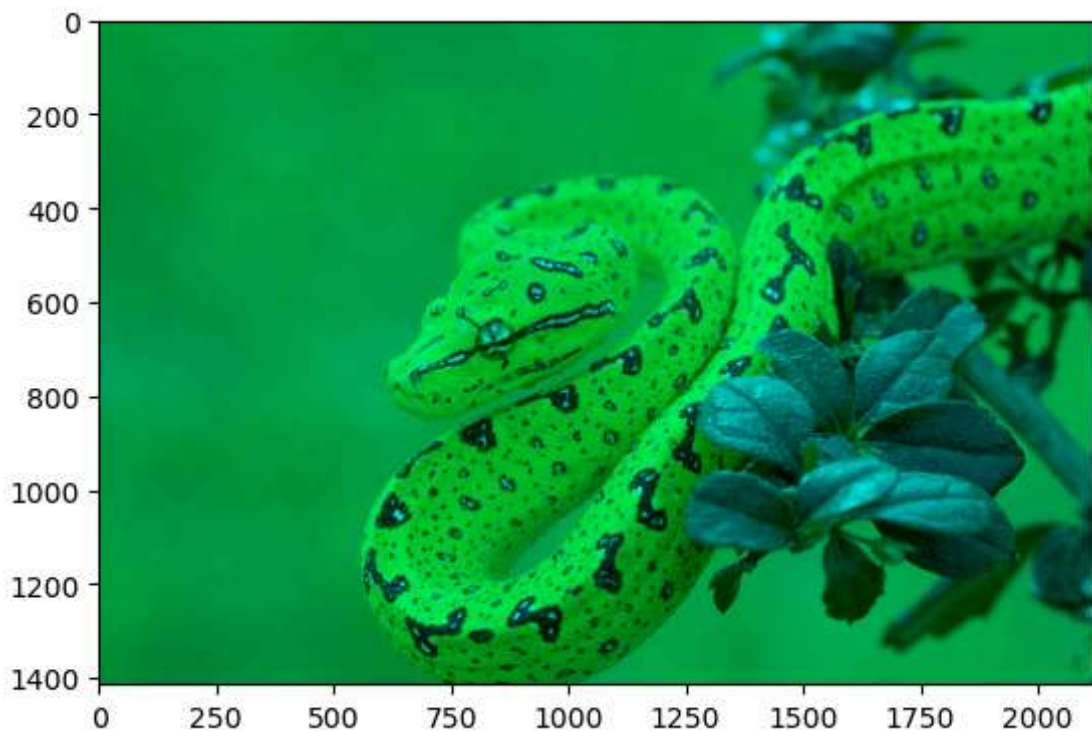


```
In [59]: snake_img1 = arr1.copy()
```

```
In [60]: snake_img1[:, :, 0] = 0
```

```
In [61]: plt.imshow(snake_img1)
```

Out[61]: <matplotlib.image.AxesImage at 0x2a3799f1340>



```
In [62]: snake_img1[:, :, 1]
```

```
Out[62]: array([[155, 155, 155, ..., 164, 164, 163],
               [155, 155, 155, ..., 164, 164, 165],
               [155, 155, 155, ..., 164, 164, 165],
               ...,
               [144, 144, 144, ..., 107, 105, 103],
               [143, 143, 143, ..., 106, 105, 106],
               [143, 143, 143, ..., 107, 106, 108]], dtype=uint8)
```

```
In [64]: snake_img1[:, :, 1]=0
snake_img1
```



```

Out[64]: array([[ 0,  0, 57],
                [ 0,  0, 57],
                [ 0,  0, 57],
                ...,
                [ 0,  0, 70],
                [ 0,  0, 70],
                [ 0,  0, 69]],

               [[ 0,  0, 57],
                [ 0,  0, 57],
                [ 0,  0, 57],
                ...,
                [ 0,  0, 70],
                [ 0,  0, 70],
                [ 0,  0, 71]],

               [[ 0,  0, 57],
                [ 0,  0, 57],
                [ 0,  0, 57],
                ...,
                [ 0,  0, 70],
                [ 0,  0, 70],
                [ 0,  0, 71]],

               ...,

               [[ 0,  0, 59],
                [ 0,  0, 59],
                [ 0,  0, 59],
                ...,
                [ 0,  0, 69],
                [ 0,  0, 70],
                [ 0,  0, 69]],

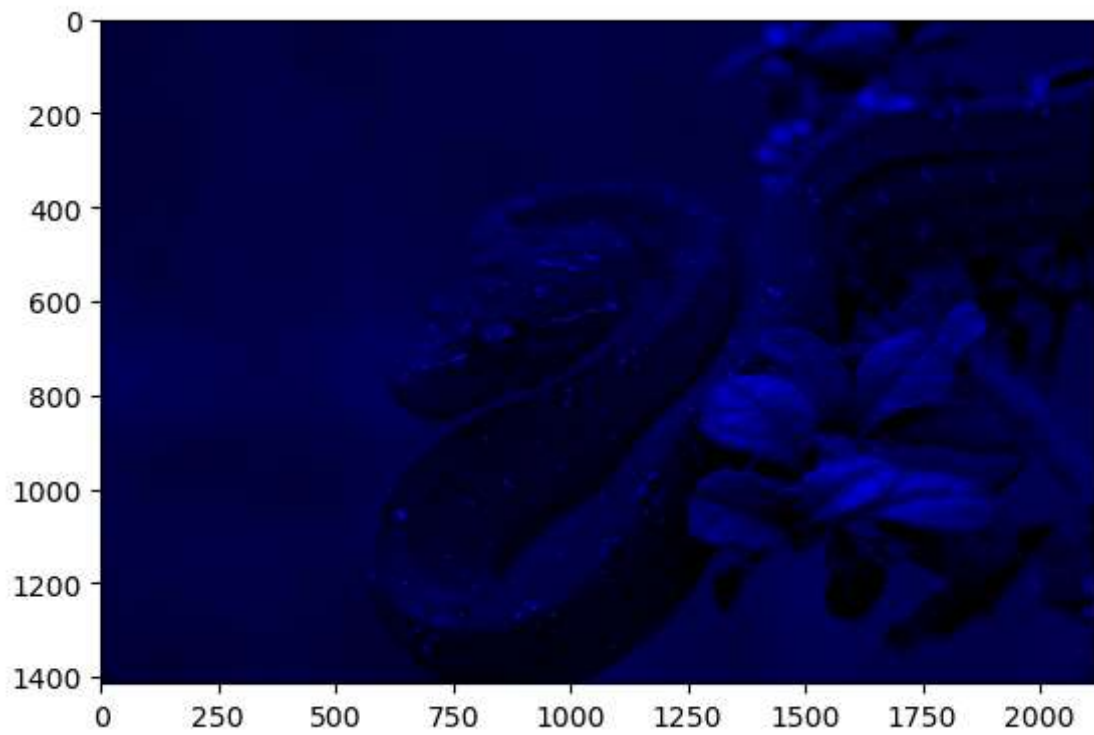
               [[ 0,  0, 58],
                [ 0,  0, 58],
                [ 0,  0, 58],
                ...,
                [ 0,  0, 71],
                [ 0,  0, 71],
                [ 0,  0, 74]],

               [[ 0,  0, 58],
                [ 0,  0, 58],
                [ 0,  0, 58],
                ...,
                [ 0,  0, 73],
                [ 0,  0, 74],
                [ 0,  0, 78]]], dtype=uint8)

```

```
In [65]: plt.imshow(snake_img1)
```

```
Out[65]: <matplotlib.image.AxesImage at 0x2a379a8ba70>
```



In []:

In []:

In []:

In []:

In []:

In []: