

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

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

```
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 = np.ones((5,5), dtype=int)
```

```
In [5]: ones_arr
```

```
Out[5]: 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 [6]: zero_arr = np.zeros((3,3), dtype=int)
```

```
In [7]: zero_arr
```

```
Out[7]: array([[0, 0, 0],
   [0, 0, 0],
   [0, 0, 0]])
```

```
In [8]: ones_arr
```

```
Out[8]: 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 [9]: ones_arr*255
```

```
Out[9]: 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 [10]: zero_arr
```

```
Out[10]: array([[0, 0, 0],
   [0, 0, 0],
   [0, 0, 0]])
```

```
In [11]: ones_arr
```

```
Out[11]: 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 [12]: import matplotlib.pyplot as plt
```

```
In [13]: %matplotlib inline
```

```
In [14]: from PIL import Image # python imaging Library
```

```
In [15]: sweety_img = Image.open(r"C:\Users\srujan\Downloads\sweety.jpg")  
sweety_img
```

```
Out[15]:
```



```
In [16]: type(sweety_img)
```

```
Out[16]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [17]: import numpy as np  
sweety_arr = np.asarray(sweety_img)
```

```
In [18]: sweety_arr
```

```
Out[18]: array([[[202, 197,  0],  
                  [203, 197,  0],  
                  [201, 198,  0],  
                  ...,  
                  [ 95, 105,  9],  
                  [ 93, 103,  7],  
                  [ 92, 102,  6]],  
  
                 [[202, 194,  0],  
                  [203, 196,  2],  
                  [203, 195,  6],  
                  ...,  
                  [ 94, 101,  5],  
                  [ 94, 101,  5],  
                  [ 93, 100,  4]],  
  
                 [[202, 191,  1],  
                  [203, 192,  4],  
                  [203, 193,  8],  
                  ...,  
                  [ 94,  98,  1],  
                  [ 95,  99,  2],  
                  [ 96, 100,  3]],  
  
                 ...,  
  
                 [[[ 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,   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,   1],  
                    [ 1,   1,   1]]], dtype=uint8)
```

```
In [19]: type(sweety_arr)
```

```
Out[19]: numpy.ndarray
```

```
In [20]: sweety_arr.shape
```

```
Out[20]: (956, 1300, 3)
```

```
In [67]: import matplotlib.pyplot as plt  
plt.imshow(sweety_arr)  
plt.show()
```



```
In [22]: sweety_black = sweety_arr.copy()
```

```
In [23]: sweety_black
```

```
Out[23]: array([[[202, 197,  0],  
                  [203, 197,  0],  
                  [201, 198,  0],  
                  ...,  
                  [ 95, 105,  9],  
                  [ 93, 103,  7],  
                  [ 92, 102,  6]],  
  
                 [[202, 194,  0],  
                  [203, 196,  2],  
                  [203, 195,  6],  
                  ...,  
                  [ 94, 101,  5],  
                  [ 94, 101,  5],  
                  [ 93, 100,  4]],  
  
                 [[202, 191,  1],  
                  [203, 192,  4],  
                  [203, 193,  8],  
                  ...,  
                  [ 94,  98,  1],  
                  [ 95,  99,  2],  
                  [ 96, 100,  3]],  
  
                 ...,  
  
                 [[ 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,   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,   1],  
                  [ 1,   1,   1]]], dtype=uint8)
```

```
In [24]: sweety_arr==sweety_black
```

```
Out[24]: 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 [71]: plt.imshow(sweety_black)
plt.show()
```



```
In [26]: sweety_black.shape
```

```
Out[26]: (956, 1300, 3)
```

```
In [27]: plt.imshow(sweety_arr[:, :, 0])
```

```
Out[27]: <matplotlib.image.AxesImage at 0x26109cc8290>
```

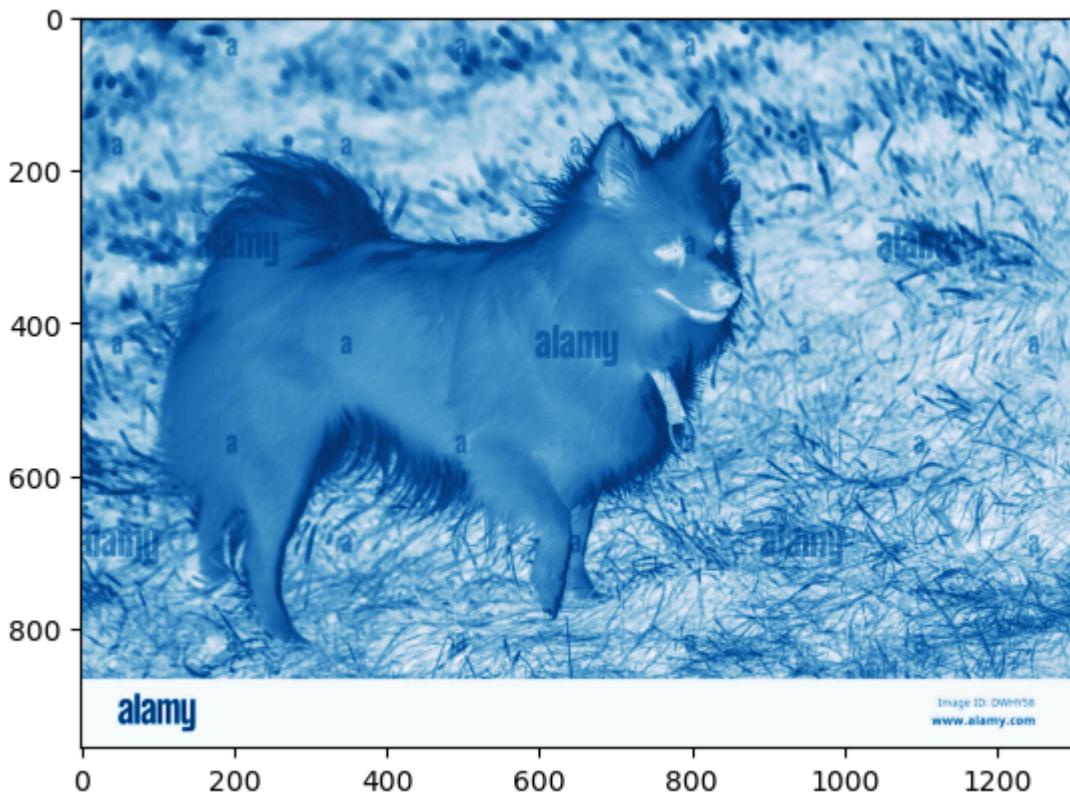
```
In [28]: sweety_black[:, :, 0]
```

```
Out[28]: array([[202, 203, 201, ..., 95, 93, 92],
   [202, 203, 203, ..., 94, 94, 93],
   [202, 203, 203, ..., 94, 95, 96],
   ...,
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1]], dtype=uint8)
```

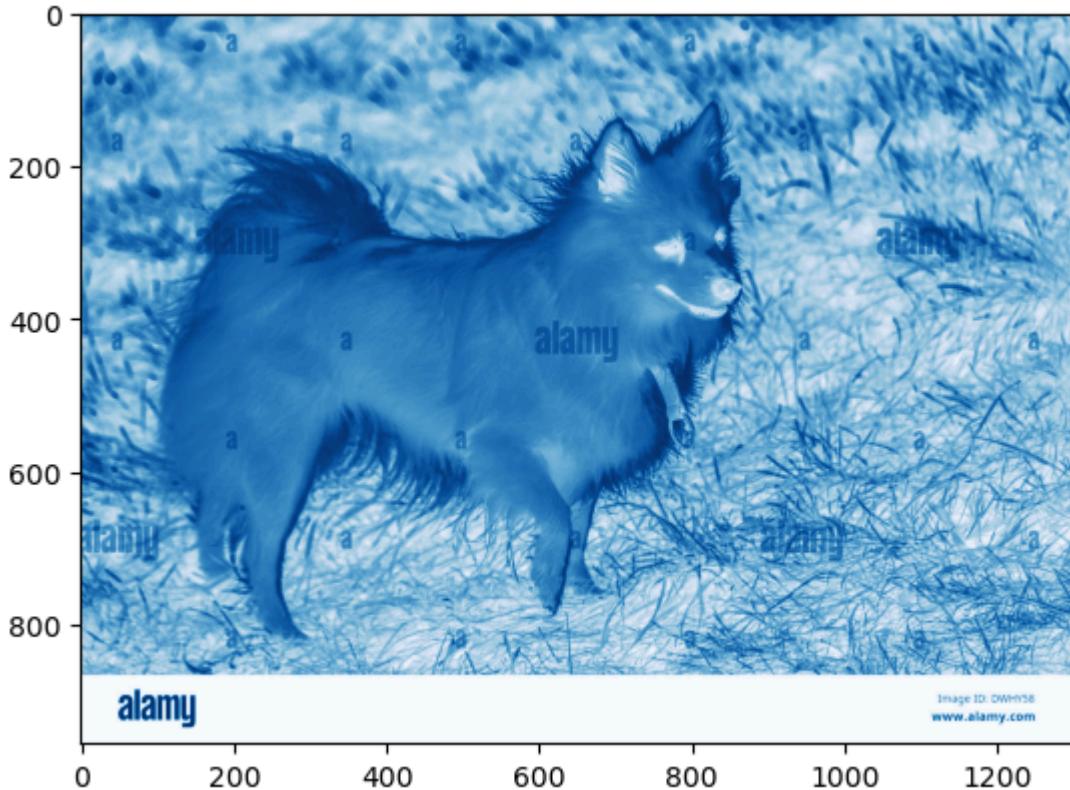
```
In [65]: plt.imshow(sweety_black[:, :, 0], cmap="grey")
plt.show()
```



```
In [68]: plt.imshow(sweety_black[:, :, 0], cmap="Blues")
plt.show()
```



```
In [70]: plt.imshow(sweety_black[:, :, 1], cmap="Blues")
plt.show()
```



```
In [72]: sweety_black[:, :, 0]
```

```
Out[72]: array([[202, 203, 201, ..., 95, 93, 92],
   [202, 203, 203, ..., 94, 94, 93],
   [202, 203, 203, ..., 94, 95, 96],
   ...,
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1]], dtype=uint8)
```

```
In [74]: sweety_black[:, :, 1]
```

```
Out[74]: array([[197, 197, 198, ..., 105, 103, 102],
   [194, 196, 195, ..., 101, 101, 100],
   [191, 192, 193, ..., 98, 99, 100],
   ...,
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1],
   [ 1,  1,  1, ...,  1,  1,  1]], dtype=uint8)
```

```
In [76]: sweety_black[:, :, 2]
```

```
Out[76]: array([[0, 0, 0, ..., 9, 7, 6],
   [0, 2, 6, ..., 5, 5, 4],
   [1, 4, 8, ..., 1, 2, 3],
   ...,
   [1, 1, 1, ..., 1, 1, 1],
   [1, 1, 1, ..., 1, 1, 1],
   [1, 1, 1, ..., 1, 1, 1]], dtype=uint8)
```

```
In [84]: sweety_black[:, :, 2]=0
```

```
In [86]: sweety_black[:, :, 2]
```

```
Out[86]: 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 [82]: plt.imshow(sweety_black)  
plt.show()
```



```
In [90]: sweety_arr
```

```
Out[90]: array([[[202, 197,  0],  
                  [203, 197,  0],  
                  [201, 198,  0],  
                  ...,  
                  [ 95, 105,  9],  
                  [ 93, 103,  7],  
                  [ 92, 102,  6]],  
  
                 [[202, 194,  0],  
                  [203, 196,  2],  
                  [203, 195,  6],  
                  ...,  
                  [ 94, 101,  5],  
                  [ 94, 101,  5],  
                  [ 93, 100,  4]],  
  
                 [[202, 191,  1],  
                  [203, 192,  4],  
                  [203, 193,  8],  
                  ...,  
                  [ 94,  98,  1],  
                  [ 95,  99,  2],  
                  [ 96, 100,  3]],  
  
                 ...,  
  
                 [[[ 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,   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,   1],  
                   [ 1,   1,   1]]], dtype=uint8)
```

```
In [92]: sweety_black
```

```
Out[92]: array([[[202,  0,  0],
   [203,  0,  0],
   [201,  0,  0],
   ...,
   [ 95,  0,  0],
   [ 93,  0,  0],
   [ 92,  0,  0]],

   [[202,  0,  0],
   [203,  0,  0],
   [203,  0,  0],
   ...,
   [ 94,  0,  0],
   [ 94,  0,  0],
   [ 93,  0,  0]],

   [[202,  0,  0],
   [203,  0,  0],
   [203,  0,  0],
   ...,
   [ 94,  0,  0],
   [ 95,  0,  0],
   [ 96,  0,  0]],

   ...,

   [[ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0],
   ...,
   [ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0]],

   [[ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0],
   ...,
   [ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0]],

   [[ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0],
   ...,
   [ 1,  0,  0],
   [ 1,  0,  0],
   [ 1,  0,  0]]], dtype=uint8)
```

```
In [94]: sweety_img
```

Out[94]:



Image ID: DWHY58
www.alamy.com

In [96]: `arr1=np.asarray(sweety_img)`In [98]: `arr1`

```
Out[98]: array([[[202, 197,  0],  
                  [203, 197,  0],  
                  [201, 198,  0],  
                  ...,  
                  [ 95, 105,  9],  
                  [ 93, 103,  7],  
                  [ 92, 102,  6]],  
  
                 [[202, 194,  0],  
                  [203, 196,  2],  
                  [203, 195,  6],  
                  ...,  
                  [ 94, 101,  5],  
                  [ 94, 101,  5],  
                  [ 93, 100,  4]],  
  
                 [[202, 191,  1],  
                  [203, 192,  4],  
                  [203, 193,  8],  
                  ...,  
                  [ 94,  98,  1],  
                  [ 95,  99,  2],  
                  [ 96, 100,  3]],  
  
                 ...,  
  
                 [[[ 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,   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,   1],  
                   [ 1,   1,   1]]], dtype=uint8)
```

```
In [102... type(arr1)
```

```
Out[102... numpy.ndarray
```

```
In [104... arr1.shape
```

```
Out[104... (956, 1300, 3)
```

In [110...]

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



In [116...]

```
sweety_img1=arr1.copy()
```

In [118...]

```
sweety_img1[:, :, 0]=0
```

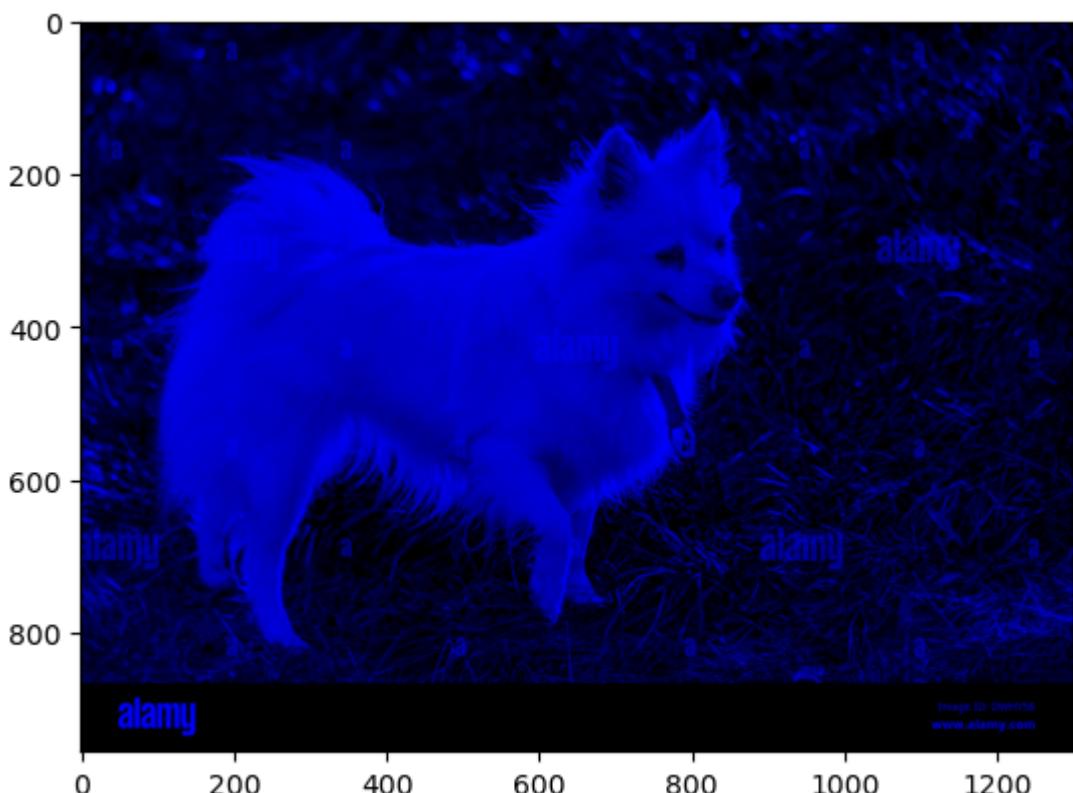
In [125...]

```
plt.imshow(sweety_img1)  
plt.show()
```



```
In [129]: sweety_img1[:, :, 1] = 0
```

```
In [131]: plt.imshow(sweety_img1)
plt.show()
```



```
In [ ]:
```