

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

```
In [3]: ones_arr = np.ones((3,3))
```

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

```
Out[5]: array([[1., 1., 1.],  
               [1., 1., 1.],  
               [1., 1., 1.]])
```

```
In [13]: ones_arr = np.ones((4,4),dtype=int)
```

```
In [15]: ones_arr
```

```
Out[15]: array([[1, 1, 1, 1],  
                 [1, 1, 1, 1],  
                 [1, 1, 1, 1],  
                 [1, 1, 1, 1]])
```

```
In [17]: ones_arr*255
```

```
Out[17]: array([[255, 255, 255, 255],  
                 [255, 255, 255, 255],  
                 [255, 255, 255, 255],  
                 [255, 255, 255, 255]])
```

```
In [19]: import matplotlib.pyplot as plt
```

```
In [21]: %matplotlib inline
```

```
In [23]: from PIL import Image
```

```
In [39]: cat_image = Image.open(r"C:\Users\galir\Downloads\30th- Set\30th- Set\cat.jpg")
```

```
In [41]: cat_image
```

Out[41]:



```
In [43]: type(cat_image)
```

```
Out[43]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [49]: cat_arr = np.asarray(cat_image)
cat_arr
```

```
Out[49]: array([[[17, 61, 88],
   [16, 60, 87],
   [16, 60, 87],
   ...,
   [15, 59, 86],
   [15, 59, 86],
   [15, 59, 86]],

   [[17, 61, 88],
   [16, 60, 87],
   [16, 60, 87],
   ...,
   [15, 59, 86],
   [15, 59, 86],
   [15, 59, 86]],

   [[17, 61, 88],
   [16, 60, 87],
   [16, 60, 87],
   ...,
   [16, 60, 87],
   [16, 60, 87],
   [16, 60, 87]],

   ...,

   [[[13, 60, 86],
   [13, 60, 86],
   [13, 60, 86],
   ...,
   [15, 62, 88],
   [15, 62, 88],
   [15, 62, 88]],

   [[13, 60, 86],
   [13, 60, 86],
   [13, 60, 86],
   ...,
   [15, 62, 88],
   [15, 62, 88],
   [15, 62, 88]],

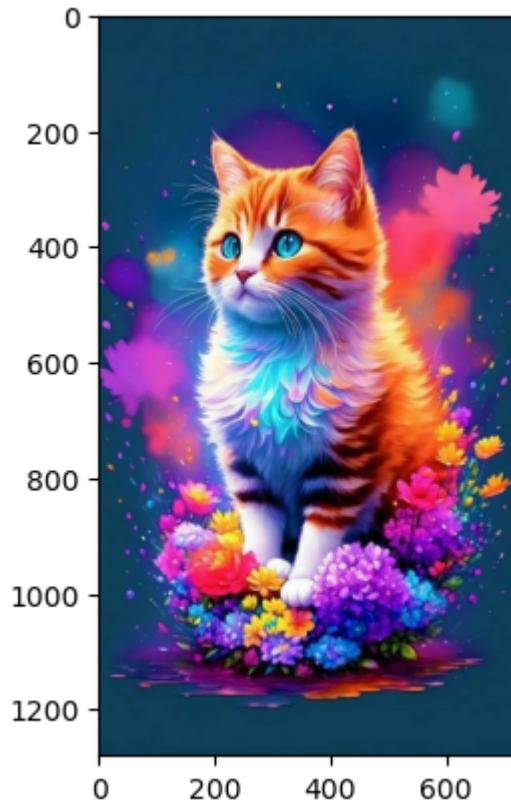
   [[13, 60, 86],
   [13, 60, 86],
   [13, 60, 86],
   ...,
   [15, 62, 88],
   [15, 62, 88],
   [15, 62, 88]]], dtype=uint8)
```

```
In [51]: type(cat_arr)
```

```
Out[51]: numpy.ndarray
```

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

```
Out[53]: <matplotlib.image.AxesImage at 0x26798c8fad0>
```



```
In [55]: cat_arr.shape
```

```
Out[55]: (1280, 720, 3)
```

```
In [57]: cat_red = cat_arr.copy()
```

```
In [59]: cat_red
```

```
Out[59]: array([[[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [15, 59, 86],  
                 [15, 59, 86],  
                 [15, 59, 86]],  
  
                [[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [15, 59, 86],  
                 [15, 59, 86],  
                 [15, 59, 86]],  
  
                [[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 [16, 60, 87]],  
  
                ...,  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]],  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]],  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]]], dtype=uint8)
```

```
In [61]: cat_arr == cat_red
```

```
Out[61]: 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]],

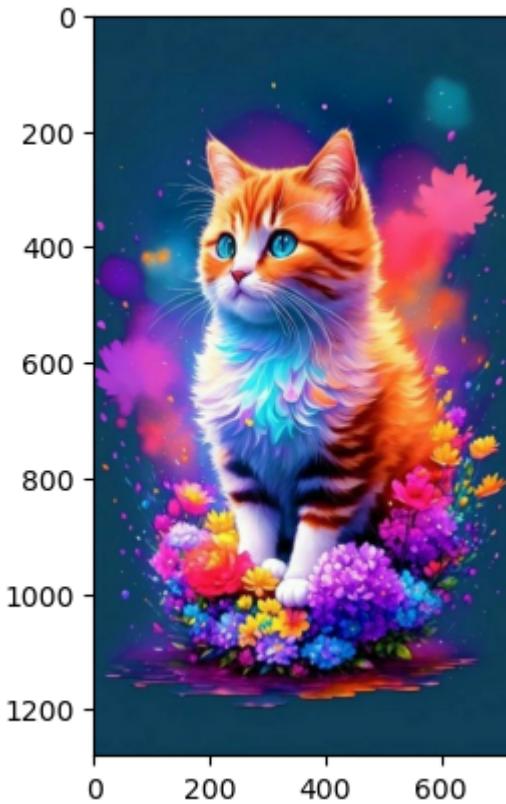
[[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

[[ 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 [63]: plt.imshow(cat_red)
```

```
Out[63]: <matplotlib.image.AxesImage at 0x2679922fad0>
```



```
In [65]: cat_red.shape
```

```
Out[65]: (1280, 720, 3)
```

```
In [67]: cat_red[:, :, 0]
```

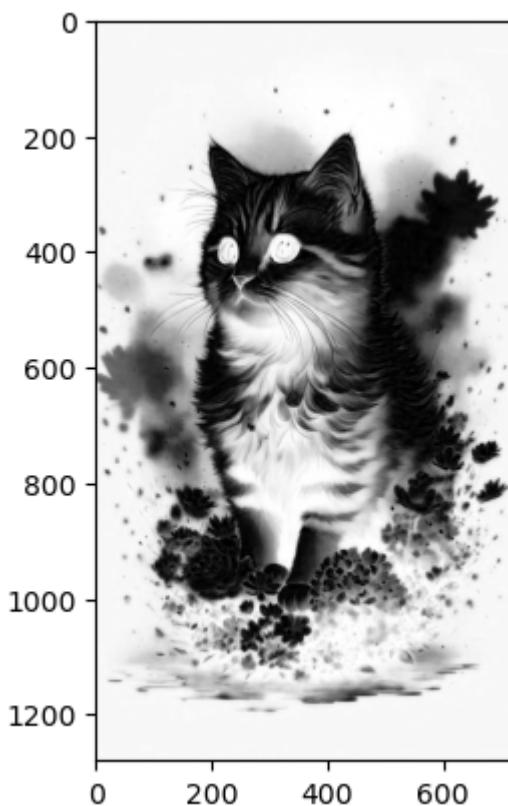
```
Out[67]: array([[17, 16, 16, ..., 15, 15, 15],  
                 [17, 16, 16, ..., 15, 15, 15],  
                 [17, 16, 16, ..., 16, 16, 16],  
                 ...,  
                 [13, 13, 13, ..., 15, 15, 15],  
                 [13, 13, 13, ..., 15, 15, 15],  
                 [13, 13, 13, ..., 15, 15, 15]], dtype=uint8)
```

```
In [69]: cat_red[:, :, :0]
```

```
Out[69]: array([], shape=(1280, 720, 0), dtype=uint8)
```

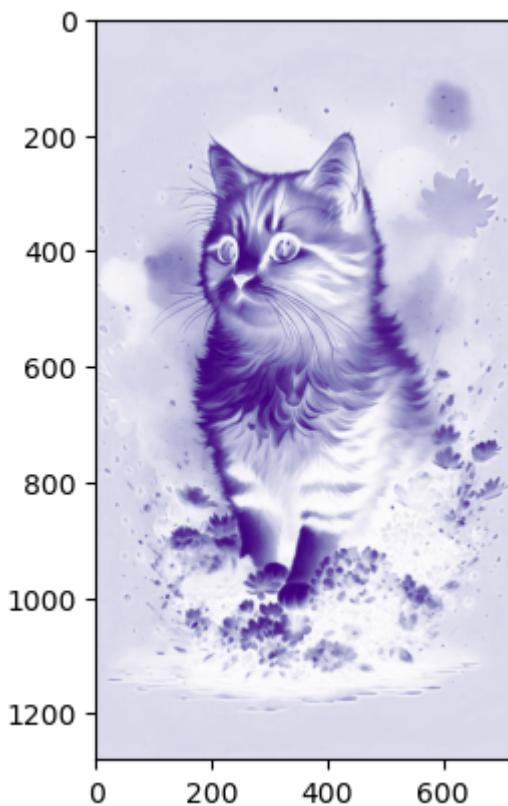
```
In [71]: plt.imshow(cat_red[:, :, 0], cmap='Greys')
```

```
Out[71]: <matplotlib.image.AxesImage at 0x26797de4ce0>
```



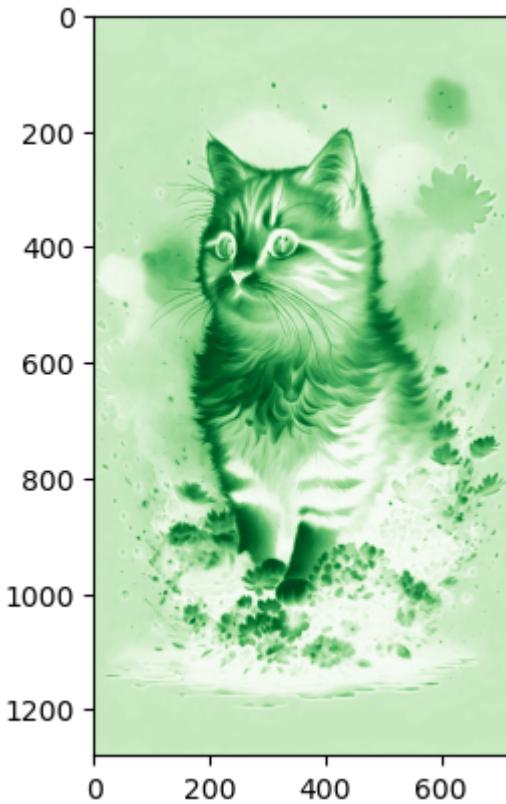
```
In [73]: plt.imshow(cat_red[:, :, 1], cmap='Purples')
```

```
Out[73]: <matplotlib.image.AxesImage at 0x26797f151c0>
```



```
In [75]: plt.imshow(cat_red[:, :, 1], cmap='Greens')
```

```
Out[75]: <matplotlib.image.AxesImage at 0x26797de4200>
```



```
In [77]: cat_red[:, :, 0]
```

```
Out[77]: array([[17, 16, 16, ..., 15, 15, 15],
                 [17, 16, 16, ..., 15, 15, 15],
                 [17, 16, 16, ..., 16, 16, 16],
                 ...,
                 [13, 13, 13, ..., 15, 15, 15],
                 [13, 13, 13, ..., 15, 15, 15],
                 [13, 13, 13, ..., 15, 15, 15]], dtype=uint8)
```

```
In [79]: cat_red[:, :, 1]
```

```
Out[79]: array([[61, 60, 60, ..., 59, 59, 59],
                 [61, 60, 60, ..., 59, 59, 59],
                 [61, 60, 60, ..., 60, 60, 60],
                 ...,
                 [60, 60, 60, ..., 62, 62, 62],
                 [60, 60, 60, ..., 62, 62, 62],
                 [60, 60, 60, ..., 62, 62, 62]], dtype=uint8)
```

```
In [81]: cat_red[:, :, 2]
```

```
Out[81]: array([[88, 87, 87, ..., 86, 86, 86],
                 [88, 87, 87, ..., 86, 86, 86],
                 [88, 87, 87, ..., 87, 87, 87],
                 ...,
                 [86, 86, 86, ..., 88, 88, 88],
                 [86, 86, 86, ..., 88, 88, 88],
                 [86, 86, 86, ..., 88, 88, 88]], dtype=uint8)
```

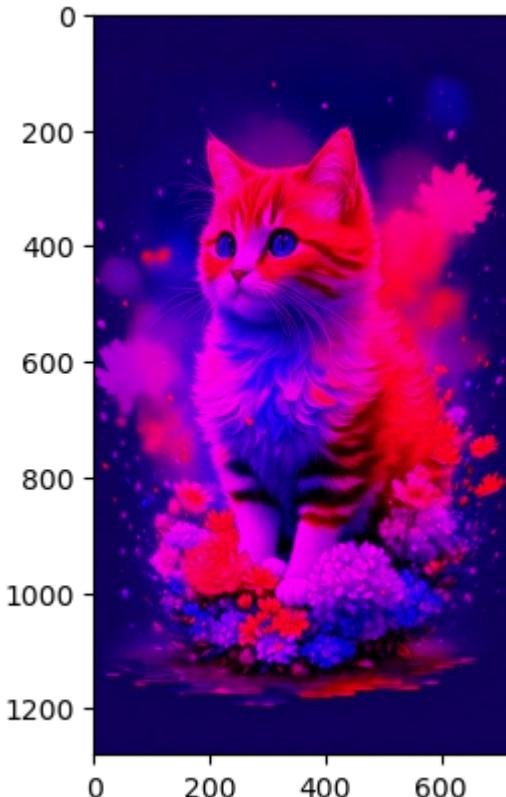
```
In [83]: cat_red[:, :, 1] = 0
```

```
In [87]: cat_red[:, :, 1]
```

```
Out[87]: 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 [89]: plt.imshow(cat_red)
```

```
Out[89]: <matplotlib.image.AxesImage at 0x2679604b5c0>
```



```
In [91]: cat_red[:, :, 2]
```

```
Out[91]: array([[88, 87, 87, ..., 86, 86, 86],  
   [88, 87, 87, ..., 86, 86, 86],  
   [88, 87, 87, ..., 87, 87, 87],  
   ...,  
   [86, 86, 86, ..., 88, 88, 88],  
   [86, 86, 86, ..., 88, 88, 88],  
   [86, 86, 86, ..., 88, 88, 88]], dtype=uint8)
```

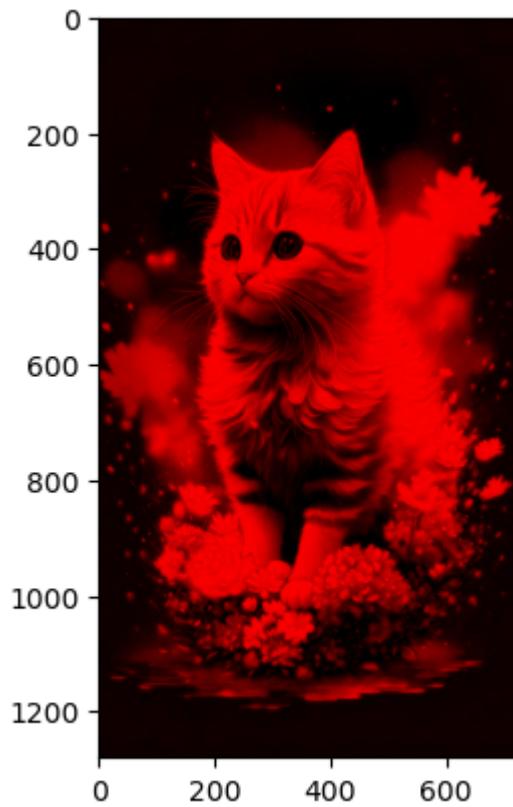
```
In [93]: cat_red[:, :, 2] = 0
```

```
In [95]: cat_red[:, :, 2]
```

```
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 [97]: plt.imshow(cat_red)
```

```
Out[97]: <matplotlib.image.AxesImage at 0x267987cf350>
```



```
In [99]: cat_arr
```

```
Out[99]: array([[[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [15, 59, 86],  
                 [15, 59, 86],  
                 [15, 59, 86]],  
  
                [[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [15, 59, 86],  
                 [15, 59, 86],  
                 [15, 59, 86]],  
  
                [[17, 61, 88],  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 ...,  
                 [16, 60, 87],  
                 [16, 60, 87],  
                 [16, 60, 87]],  
  
                ...,  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]],  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]],  
  
                [[13, 60, 86],  
                 [13, 60, 86],  
                 [13, 60, 86],  
                 ...,  
                 [15, 62, 88],  
                 [15, 62, 88],  
                 [15, 62, 88]]], dtype=uint8)
```

In [101... cat_red

```
Out[101... array([[[17,  0,  0],
   [16,  0,  0],
   [16,  0,  0],
   ...,
   [15,  0,  0],
   [15,  0,  0],
   [15,  0,  0]],

   [[17,  0,  0],
   [16,  0,  0],
   [16,  0,  0],
   ...,
   [15,  0,  0],
   [15,  0,  0],
   [15,  0,  0]],

   [[17,  0,  0],
   [16,  0,  0],
   [16,  0,  0],
   ...,
   [16,  0,  0],
   [16,  0,  0],
   [16,  0,  0]],

   ...,

   [[13,  0,  0],
   [13,  0,  0],
   [13,  0,  0],
   ...,
   [15,  0,  0],
   [15,  0,  0],
   [15,  0,  0]],

   [[13,  0,  0],
   [13,  0,  0],
   [13,  0,  0],
   ...,
   [15,  0,  0],
   [15,  0,  0],
   [15,  0,  0]],

   [[13,  0,  0],
   [13,  0,  0],
   [13,  0,  0],
   ...,
   [15,  0,  0],
   [15,  0,  0],
   [15,  0,  0]]], dtype=uint8)
```

```
In [103... cat_image
```

Out[103...]



```
In [109...]: arr1 = np.asarray(cat_image)
```

```
In [111...]: type(arr1)
```

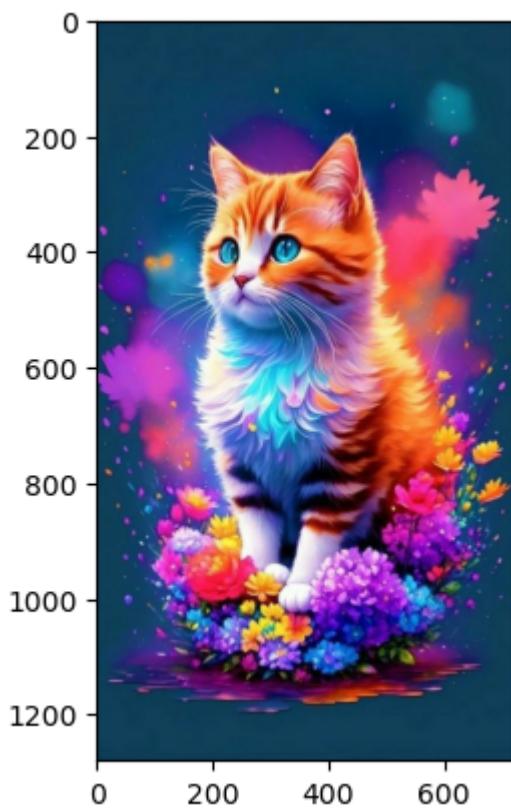
```
Out[111...]: numpy.ndarray
```

```
In [113...]: arr1.shape
```

```
Out[113...]: (1280, 720, 3)
```

```
In [115...]: plt.imshow(arr1)
```

```
Out[115...]: <matplotlib.image.AxesImage at 0x2679878bb60>
```

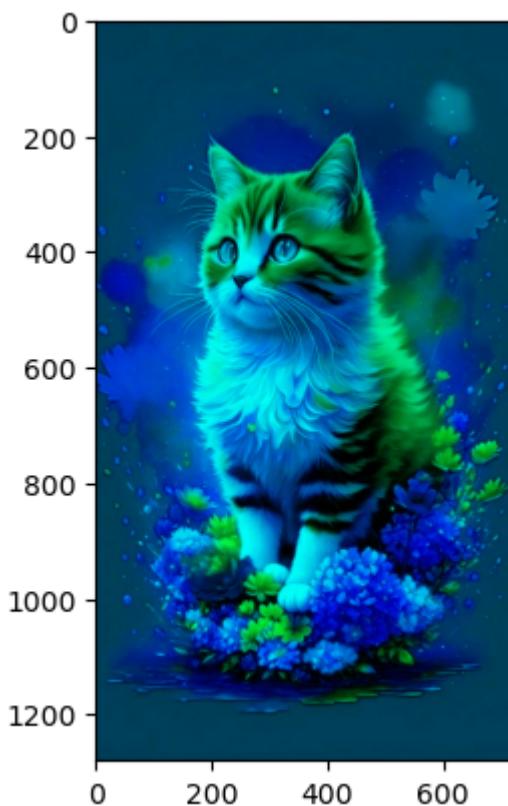


```
In [117...]: cat_image1 = arr1.copy()
```

```
In [119...]: cat_image1[:, :, 0] = 0
```

```
In [121...]: plt.imshow(cat_image1)
```

```
Out[121...]: <matplotlib.image.AxesImage at 0x2679934fad0>
```



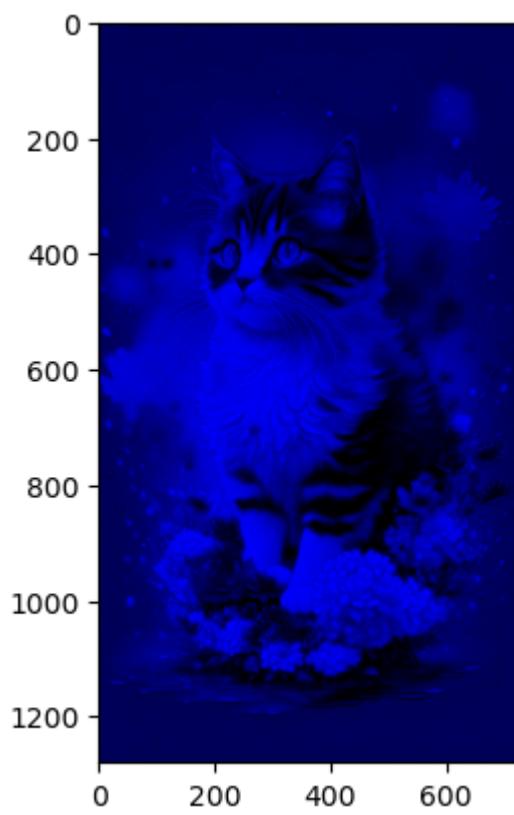
```
In [123...]: cat_image1[:, :, 1]
```

```
Out[123...]: array([[61, 60, 60, ..., 59, 59, 59],  
                   [61, 60, 60, ..., 59, 59, 59],  
                   [61, 60, 60, ..., 60, 60, 60],  
                   ...,  
                   [60, 60, 60, ..., 62, 62, 62],  
                   [60, 60, 60, ..., 62, 62, 62],  
                   [60, 60, 60, ..., 62, 62, 62]], dtype=uint8)
```

```
In [125...]: cat_image1[:, :, 1] = 0
```

```
In [127...]: plt.imshow(cat_image1)
```

```
Out[127...]: <matplotlib.image.AxesImage at 0x26799373410>
```



In []: