

```

import numpy as np

one_arr=np.ones([5,5])
one_arr

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.]])

ones_arr=np.ones([5,5],dtype=int)
ones_arr

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]])

ones_arr*255

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]])

zeros_arr=np.zeros([3,3],dtype=int)
zeros_arr

array([[0, 0, 0],
       [0, 0, 0],
       [0, 0, 0]])

import matplotlib.pyplot as plt

from PIL import Image

ele_img=Image.open(r'C:\Users\A.Rohith Venkatesh\Downloads\
ele_img.jpg')
ele_img

```



```
ele_arr=np.asarray(ele_img)
ele_arr
```

```
array([[223, 196, 65],
       [220, 195, 79],
       [209, 185, 85],
       ...,
       [161, 116, 61],
       [130, 89, 33],
       [106, 68, 19]],

      [[240, 211, 83],
       [228, 201, 86],
       [211, 186, 86],
       ...,
       [150, 107, 52],
       [126, 87, 30],
       [104, 70, 22]],

      [[246, 215, 88],
       [232, 201, 85],
       [214, 186, 86],
       ...,
       [139, 100, 43],
       [113, 78, 22],
       [111, 80, 33]],

      ...,

      [[ 90, 88, 63],
```

```

[ 91,  87,  62],
[ 91,  86,  64],
...,
[ 66,  55,  27],
[ 66,  55,  27],
[ 66,  55,  27]],

[[114, 111,  80],
 [116, 112,  83],
 [117, 113,  84],
 ...,
 [ 63,  54,  25],
 [ 64,  53,  25],
 [ 65,  54,  26]],

[[124, 121,  86],
 [127, 124,  91],
 [129, 124,  94],
 ...,
 [ 59,  50,  19],
 [ 60,  51,  20],
 [ 61,  50,  20]]], dtype=uint8)

```

```
type(ele_arr)
```

```
numpy.ndarray
```

```
ele_arr=np.shape(ele_img)
```

```
ele_arr
```

```
(240, 429, 3)
```

```
ele_img
```



```
type(ele_img)
```

```
PIL.JpegImagePlugin.JpegImageFile
```

```
ele_arr
```

```
(240, 429, 3)
```

```
plt.imshow(ele_arr)
```

```
-----  
-----  
TypeError                                Traceback (most recent call  
last)  
Cell In[24], line 1  
----> 1 plt.imshow(ele_arr)
```

```
File ~\anaconda3\Anaconda 3\Lib\site-packages\matplotlib\  
pyplot.py:3358, in imshow(X, cmap, norm, aspect, interpolation, alpha,  
vmin, vmax, origin, extent, interpolation_stage, filternorm,  
filterrad, resample, url, data, **kwargs)
```

```
    3337 @_copy_docstring_and_deprecators(Axes.imshow)  
    3338 def imshow(  
    3339     X: ArrayLike | PIL.Image.Image,  
    (...)  
    3356     **kwargs,  
    3357 ) -> AxesImage:  
-> 3358     __ret = gca().imshow(  
    3359         X,  
    3360         cmap=cmap,  
    3361         norm=norm,
```

```

3362         aspect=aspect,
3363         interpolation=interpolation,
3364         alpha=alpha,
3365         vmin=vmin,
3366         vmax=vmax,
3367         origin=origin,
3368         extent=extent,
3369         interpolation_stage=interpolation_stage,
3370         filternorm=filternorm,
3371         filterrad=filterrad,
3372         resample=resample,
3373         url=url,
3374         **({"data": data} if data is not None else {}),
3375         **kwargs,
3376     )
3377     sci(__ret)
3378     return __ret

```

File ~\anaconda3\Anaconda 3\Lib\site-packages\matplotlib__init__.py:1465, in _preprocess_data.<locals>.inner(ax, data, *args, **kwargs)

```

1462 @functools.wraps(func)
1463 def inner(ax, *args, data=None, **kwargs):
1464     if data is None:
-> 1465         return func(ax, *map(sanitize_sequence, args),
**kwargs)
1467     bound = new_sig.bind(ax, *args, **kwargs)
1468     auto_label = (bound.arguments.get(label_namer)
1469                  or bound.kwargs.get(label_namer))

```

File ~\anaconda3\Anaconda 3\Lib\site-packages\matplotlib\axes_axes.py:5759, in Axes.imshow(self, X, cmap, norm, aspect, interpolation, alpha, vmin, vmax, origin, extent, interpolation_stage, filternorm, filterrad, resample, url, **kwargs)

```

5756 if aspect is not None:
5757     self.set_aspect(aspect)
-> 5759 im.set_data(X)
5760 im.set_alpha(alpha)
5761 if im.get_clip_path() is None:
5762     # image does not already have clipping set, clip to axes
patch

```

File ~\anaconda3\Anaconda 3\Lib\site-packages\matplotlib\image.py:723, in _ImageBase.set_data(self, A)

```

721 if isinstance(A, PIL.Image.Image):
722     A = pil_to_array(A) # Needed e.g. to apply png palette.
--> 723 self._A = self._normalize_image_array(A)
724 self._imcache = None
725 self.stale = True

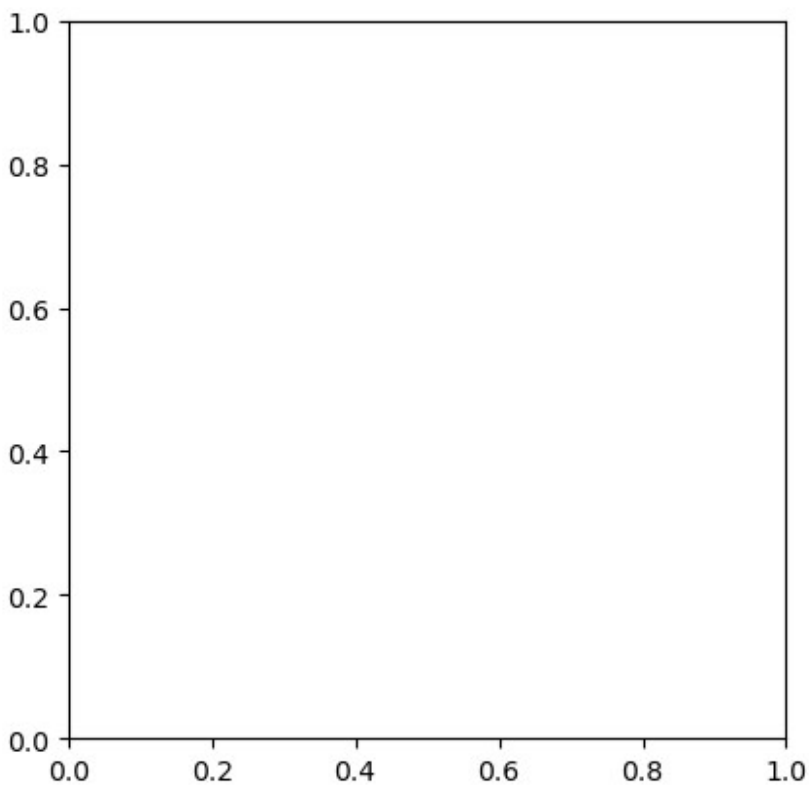
```

```

File ~\anaconda3\Anaconda 3\Lib\site-packages\matplotlib\image.py:693,
in _ImageBase._normalize_image_array(A)
    691     A = A.squeeze(-1) # If just (M, N, 1), assume scalar and
apply colormap.
    692 if not (A.ndim == 2 or A.ndim == 3 and A.shape[-1] in [3, 4]):
--> 693     raise TypeError(f"Invalid shape {A.shape} for image data")
    694 if A.ndim == 3:
    695     # If the input data has values outside the valid range
(after
    696     # normalisation), we issue a warning and then clip X to
the bounds
    697     # - otherwise casting wraps extreme values, hiding
outliers and
    698     # making reliable interpretation impossible.
    699     high = 255 if np.issubdtype(A.dtype, np.integer) else 1

TypeError: Invalid shape (3,) for image data

```



```

ele_arr=np.asarray(ele_img)
ele_arr
array([[223, 196, 65],
       [220, 195, 79],
       [209, 185, 85],
       ...,

```

```

        [161, 116, 61],
        [130, 89, 33],
        [106, 68, 19]],

    [[240, 211, 83],
     [228, 201, 86],
     [211, 186, 86],
     ...,
     [150, 107, 52],
     [126, 87, 30],
     [104, 70, 22]],

    [[246, 215, 88],
     [232, 201, 85],
     [214, 186, 86],
     ...,
     [139, 100, 43],
     [113, 78, 22],
     [111, 80, 33]],

    ...,

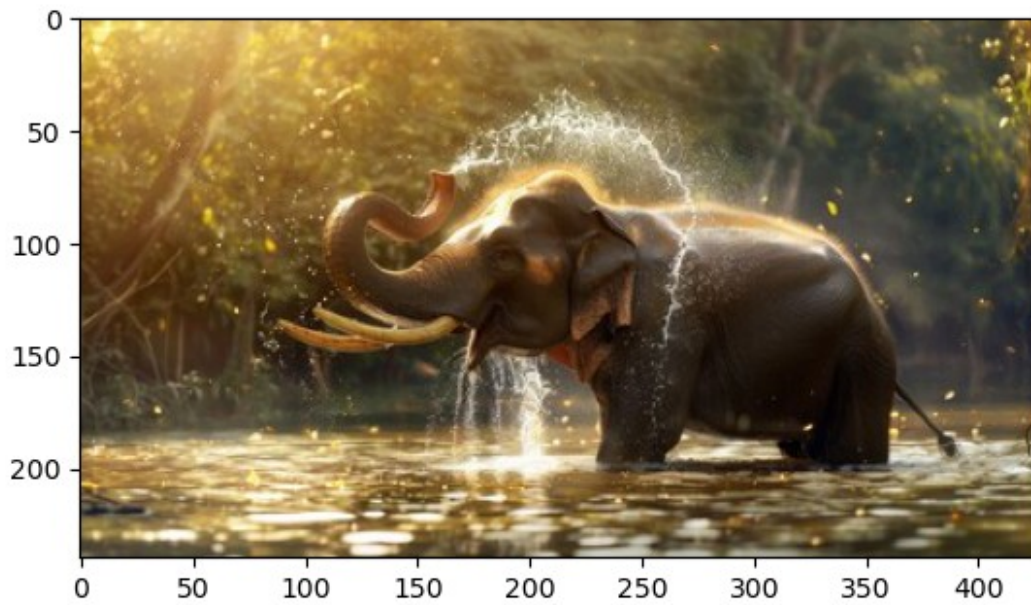
    [[ 90, 88, 63],
     [ 91, 87, 62],
     [ 91, 86, 64],
     ...,
     [ 66, 55, 27],
     [ 66, 55, 27],
     [ 66, 55, 27]],

    [[114, 111, 80],
     [116, 112, 83],
     [117, 113, 84],
     ...,
     [ 63, 54, 25],
     [ 64, 53, 25],
     [ 65, 54, 26]],

    [[124, 121, 86],
     [127, 124, 91],
     [129, 124, 94],
     ...,
     [ 59, 50, 19],
     [ 60, 51, 20],
     [ 61, 50, 20]]], dtype=uint8)

plt.imshow(ele_arr)
<matplotlib.image.AxesImage at 0x1e128ceb950>

```



```
ele_arr.shape
(240, 429, 3)
ele_red = ele_arr.copy()
ele_red
array([[ [223, 196, 65],
        [220, 195, 79],
        [209, 185, 85],
        ...,
        [161, 116, 61],
        [130, 89, 33],
        [106, 68, 19]],
       [ [240, 211, 83],
        [228, 201, 86],
        [211, 186, 86],
        ...,
        [150, 107, 52],
        [126, 87, 30],
        [104, 70, 22]],
       [ [246, 215, 88],
        [232, 201, 85],
        [214, 186, 86],
        ...,
        [139, 100, 43],
        [113, 78, 22],
        [111, 80, 33]],
```



```

...,
[[ 90,  88,  63],
 [ 91,  87,  62],
 [ 91,  86,  64],
 ...,
 [ 66,  55,  27],
 [ 66,  55,  27],
 [ 66,  55,  27]],

[[114, 111,  80],
 [116, 112,  83],
 [117, 113,  84],
 ...,
 [ 63,  54,  25],
 [ 64,  53,  25],
 [ 65,  54,  26]],

[[124, 121,  86],
 [127, 124,  91],
 [129, 124,  94],
 ...,
 [ 59,  50,  19],
 [ 60,  51,  20],
 [ 61,  50,  20]]], dtype=uint8)

```

```

ele_arr==ele_red

```

```

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]],

    ...,

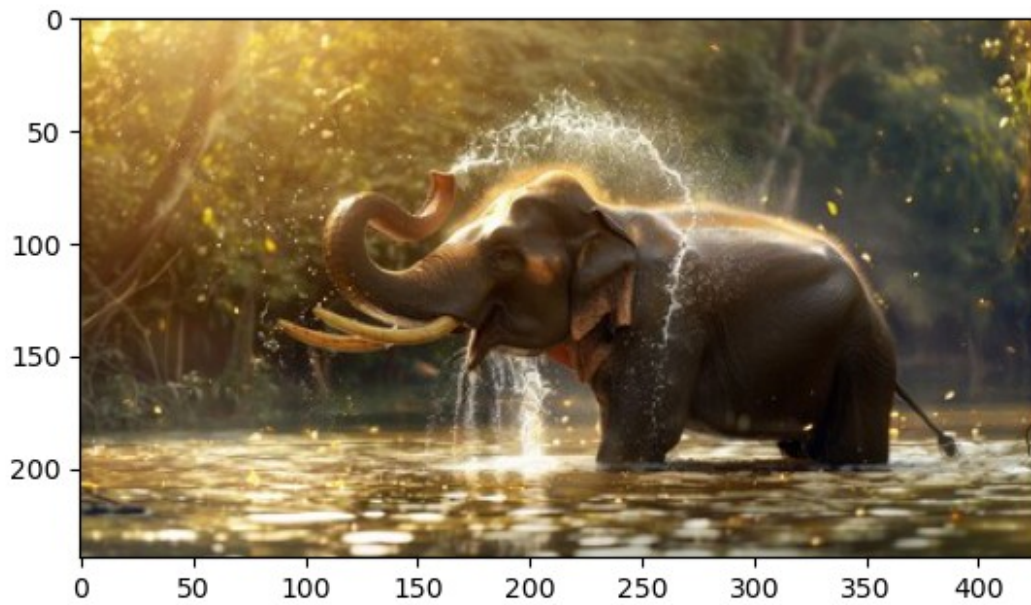
    [[ True,  True,  True],
     [ True,  True,  True],
     [ True,  True,  True],
     ...,
     [ True,  True,  True],
     [ True,  True,  True],
     [ True,  True,  True]],

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

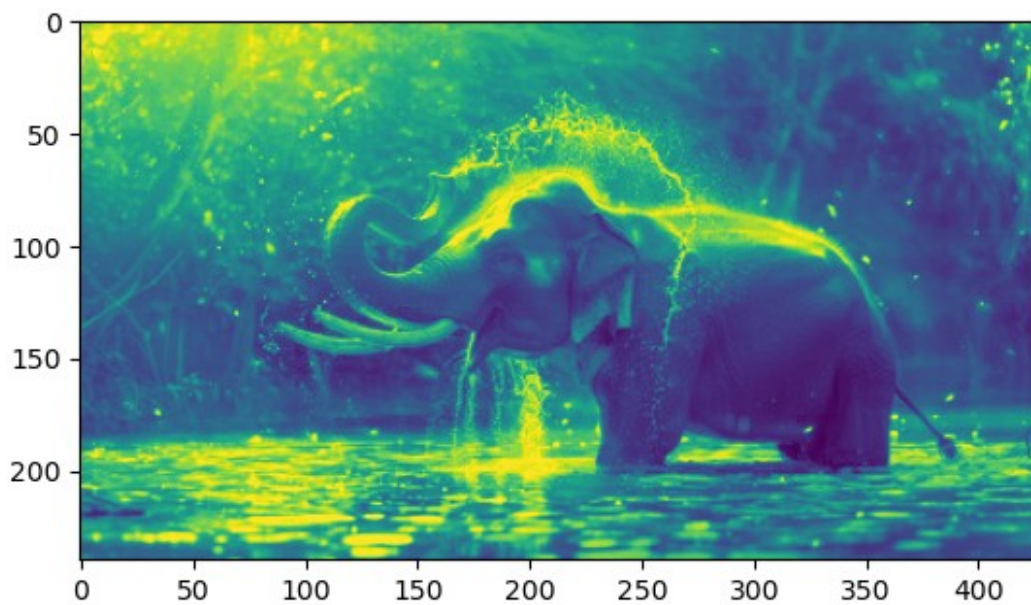
    [[ True,  True,  True],
     [ True,  True,  True],
     [ True,  True,  True],
     ...,
     [ True,  True,  True],
     [ True,  True,  True],
     [ True,  True,  True]]])

plt.imshow(ele_red)
<matplotlib.image.AxesImage at 0x1e128e0f950>

```



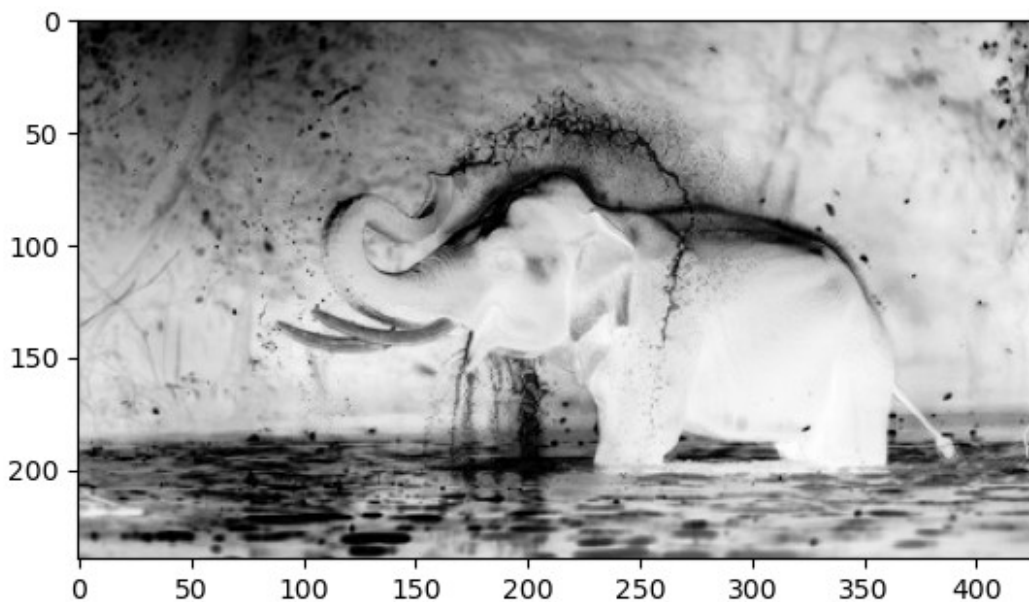
```
ele_red.shape  
(240, 429, 3)  
plt.imshow(ele_red[:, :, 0])  
<matplotlib.image.AxesImage at 0x1e1294b3650>
```



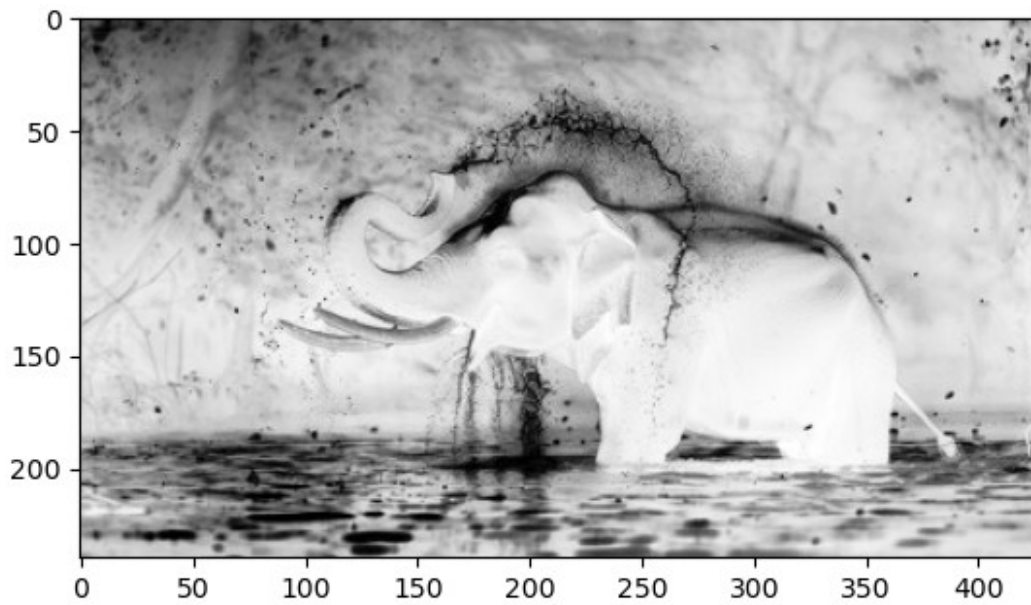
```
ele_red[:, :, 0]
```

```
array([[223, 220, 209, ..., 161, 130, 106],
       [240, 228, 211, ..., 150, 126, 104],
       [246, 232, 214, ..., 139, 113, 111],
       ...,
       [ 90,  91,  91, ...,  66,  66,  66],
       [114, 116, 117, ...,  63,  64,  65],
       [124, 127, 129, ...,  59,  60,  61]], dtype=uint8)

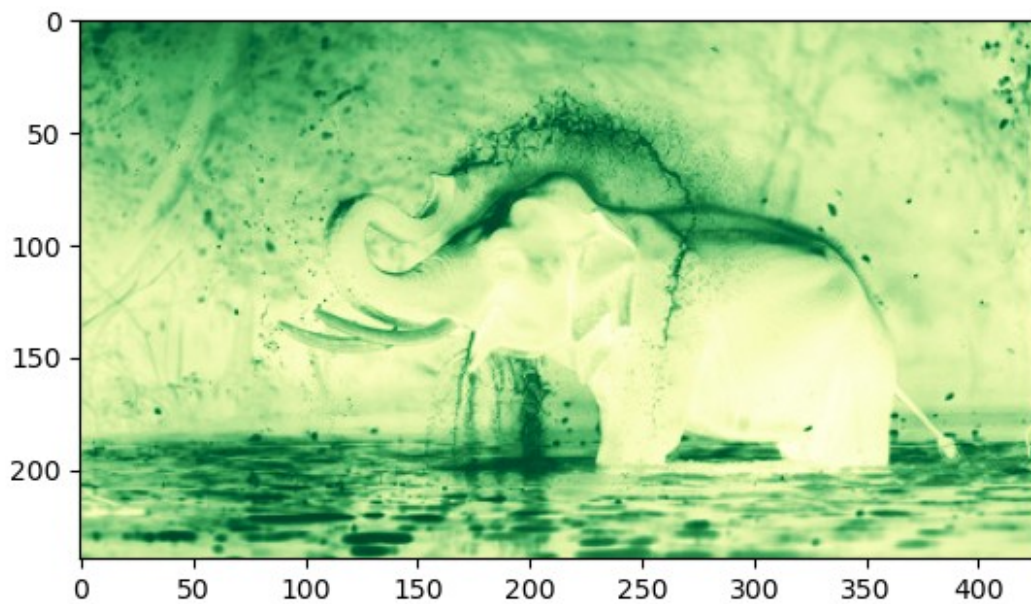
plt.imshow(ele_red[:, :, 0], cmap='Greys')
<matplotlib.image.AxesImage at 0x1e128de0920>
```



```
plt.imshow(ele_red[:, :, 1], cmap='Greys')
<matplotlib.image.AxesImage at 0x1e1294f32c0>
```



```
plt.imshow(ele_red[:, :, 1], cmap='YlGn')
<matplotlib.image.AxesImage at 0x1e1295a0680>
```



```
ele_red[:, :, 0]
array([[223, 220, 209, ..., 161, 130, 106],
       [240, 228, 211, ..., 150, 126, 104],
       [246, 232, 214, ..., 139, 113, 111],
       ...,
       [ 90,  91,  91, ...,  66,  66,  66],
```

```
    [114, 116, 117, ..., 63, 64, 65],  
    [124, 127, 129, ..., 59, 60, 61]], dtype=uint8)
```

```
ele_red[:, :, 1]
```

```
array([[196, 195, 185, ..., 116, 89, 68],  
       [211, 201, 186, ..., 107, 87, 70],  
       [215, 201, 186, ..., 100, 78, 80],  
       ...,  
       [ 88, 87, 86, ..., 55, 55, 55],  
       [111, 112, 113, ..., 54, 53, 54],  
       [121, 124, 124, ..., 50, 51, 50]], dtype=uint8)
```

```
ele_red[:, :, 2]
```

```
array([[65, 79, 85, ..., 61, 33, 19],  
       [83, 86, 86, ..., 52, 30, 22],  
       [88, 85, 86, ..., 43, 22, 33],  
       ...,  
       [63, 62, 64, ..., 27, 27, 27],  
       [80, 83, 84, ..., 25, 25, 26],  
       [86, 91, 94, ..., 19, 20, 20]], dtype=uint8)
```

```
ele_red[:, :, 1]=0
```

```
ele_red[:, :, 1]
```

```
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)
```

```
plt.imshow(ele_red)
```

```
<matplotlib.image.AxesImage at 0x1e128c9b9e0>
```



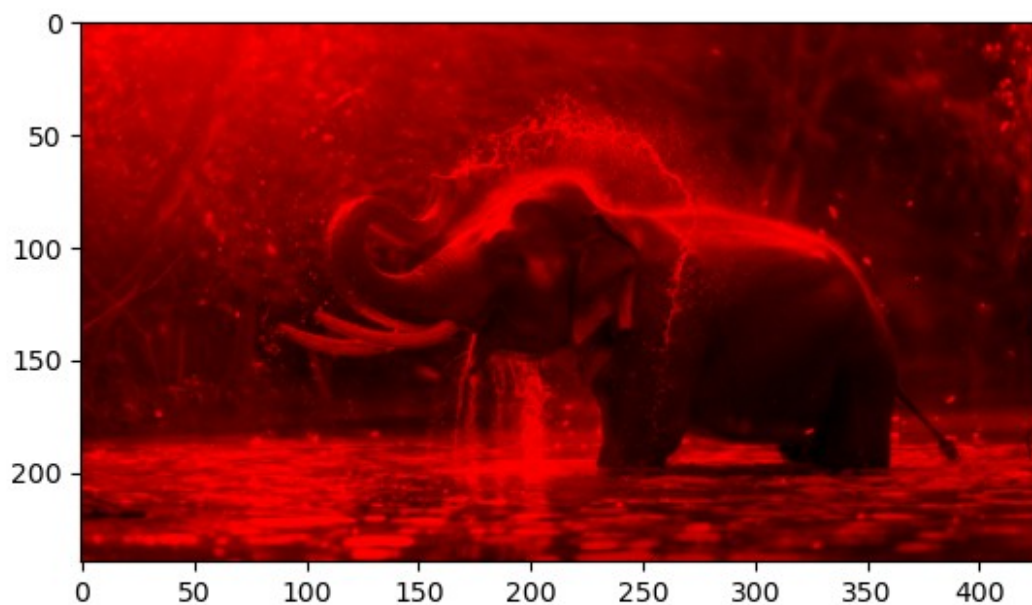

```

ele_red[:, :, 2]
array([[65, 79, 85, ..., 61, 33, 19],
       [83, 86, 86, ..., 52, 30, 22],
       [88, 85, 86, ..., 43, 22, 33],
       ...,
       [63, 62, 64, ..., 27, 27, 27],
       [80, 83, 84, ..., 25, 25, 26],
       [86, 91, 94, ..., 19, 20, 20]], dtype=uint8)

ele_red[:, :, 2]=0
ele_red[:, :, 2]
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)

plt.imshow(ele_red)
<matplotlib.image.AxesImage at 0x1e1258c91f0>

```



ele_arr

```
array([[223, 196, 65],  
       [220, 195, 79],  
       [209, 185, 85],  
       ...,  
       [161, 116, 61],  
       [130, 89, 33],  
       [106, 68, 19]],  
       [[240, 211, 83],  
       [228, 201, 86],  
       [211, 186, 86],  
       ...,  
       [150, 107, 52],  
       [126, 87, 30],  
       [104, 70, 22]],  
       [[246, 215, 88],  
       [232, 201, 85],  
       [214, 186, 86],  
       ...,  
       [139, 100, 43],  
       [113, 78, 22],  
       [111, 80, 33]],  
       ...,  
       [[ 90, 88, 63],  
       [ 91, 87, 62],  
       [ 91, 86, 64],
```



```

    ...,
    [ 66,  55,  27],
    [ 66,  55,  27],
    [ 66,  55,  27]],
    [[114, 111,  80],
     [116, 112,  83],
     [117, 113,  84],
     ...,
     [ 63,  54,  25],
     [ 64,  53,  25],
     [ 65,  54,  26]],
    [[124, 121,  86],
     [127, 124,  91],
     [129, 124,  94],
     ...,
     [ 59,  50,  19],
     [ 60,  51,  20],
     [ 61,  50,  20]]], dtype=uint8)

```

ele_red

```

array([[223,  0,  0],
       [220,  0,  0],
       [209,  0,  0],
       ...,
       [161,  0,  0],
       [130,  0,  0],
       [106,  0,  0]],
       [[240,  0,  0],
        [228,  0,  0],
        [211,  0,  0],
        ...,
        [150,  0,  0],
        [126,  0,  0],
        [104,  0,  0]],
       [[246,  0,  0],
        [232,  0,  0],
        [214,  0,  0],
        ...,
        [139,  0,  0],
        [113,  0,  0],
        [111,  0,  0]],
       ...,
       [[ 90,  0,  0],

```

```

[ 91,  0,  0],
[ 91,  0,  0],
...,
[ 66,  0,  0],
[ 66,  0,  0],
[ 66,  0,  0]],

[[114,  0,  0],
 [116,  0,  0],
 [117,  0,  0],
 ...,
 [ 63,  0,  0],
 [ 64,  0,  0],
 [ 65,  0,  0]],

[[124,  0,  0],
 [127,  0,  0],
 [129,  0,  0],
 ...,
 [ 59,  0,  0],
 [ 60,  0,  0],
 [ 61,  0,  0]]], dtype=uint8)

```

```
plt.imshow(ele_img)
```

```
<matplotlib.image.AxesImage at 0x1e128d8dc10>
```

