

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

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

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

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

```
In [103...]: sheep = Image.open(r"C:\bikash\Notes\Sheep.jpeg")
sheep
```

```
Out[103...]
```



```
In [105...]: type(sheep)
```

```
Out[105...]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [107...]: sheep_arr = np.asarray(sheep)
sheep_arr
```

```
Out[107... array([[[ 38,  39,  34],  
   [ 39,  40,  35],  
   [ 44,  45,  40],  
   ...,  
   [181, 207, 230],  
   [183, 209, 232],  
   [186, 212, 235]],  
  
   [[ 38,  39,  34],  
   [ 39,  40,  35],  
   [ 43,  44,  39],  
   ...,  
   [186, 212, 235],  
   [188, 214, 237],  
   [191, 217, 240]],  
  
   [[ 39,  40,  35],  
   [ 39,  40,  35],  
   [ 42,  43,  38],  
   ...,  
   [189, 215, 238],  
   [190, 216, 239],  
   [192, 218, 241]],  
  
   ...,  
  
   [[ 78,  66,  44],  
   [ 78,  66,  44],  
   [ 77,  65,  43],  
   ...,  
   [ 88,  72,  56],  
   [ 88,  72,  56],  
   [ 88,  72,  56]],  
  
   [[ 78,  66,  44],  
   [ 77,  65,  43],  
   [ 77,  65,  43],  
   ...,  
   [ 89,  73,  57],  
   [ 89,  73,  57],  
   [ 89,  73,  57]],  
  
   [[ 77,  65,  43],  
   [ 77,  65,  43],  
   [ 76,  64,  42],  
   ...,  
   [ 90,  74,  58],  
   [ 90,  74,  58],  
   [ 90,  74,  58]]], dtype=uint8)
```

```
In [109... type(sheep_arr)
```

```
Out[109... numpy.ndarray
```

```
In [111... plt.imshow(sheep_arr)
```

```
Out[111... <matplotlib.image.AxesImage at 0x2761b677050>
```

```
In [126... plt.imshow(sheep_arr)
plt.show()
```



```
In [128... sheep_arr.shape
```

```
Out[128... (980, 1699, 3)
```

```
In [132... sheep_red = sheep_arr.copy()
sheep_red
```

```
Out[132... array([[[ 38,  39,  34],  
   [ 39,  40,  35],  
   [ 44,  45,  40],  
   ...,  
   [181, 207, 230],  
   [183, 209, 232],  
   [186, 212, 235]],  
  
   [[ 38,  39,  34],  
   [ 39,  40,  35],  
   [ 43,  44,  39],  
   ...,  
   [186, 212, 235],  
   [188, 214, 237],  
   [191, 217, 240]],  
  
   [[ 39,  40,  35],  
   [ 39,  40,  35],  
   [ 42,  43,  38],  
   ...,  
   [189, 215, 238],  
   [190, 216, 239],  
   [192, 218, 241]],  
  
   ...,  
  
   [[ 78,  66,  44],  
   [ 78,  66,  44],  
   [ 77,  65,  43],  
   ...,  
   [ 88,  72,  56],  
   [ 88,  72,  56],  
   [ 88,  72,  56]],  
  
   [[ 78,  66,  44],  
   [ 77,  65,  43],  
   [ 77,  65,  43],  
   ...,  
   [ 89,  73,  57],  
   [ 89,  73,  57],  
   [ 89,  73,  57]],  
  
   [[ 77,  65,  43],  
   [ 77,  65,  43],  
   [ 76,  64,  42],  
   ...,  
   [ 90,  74,  58],  
   [ 90,  74,  58],  
   [ 90,  74,  58]]], dtype=uint8)
```

```
In [134... sheep_arr == sheep_red
```

```
Out[134... 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]]])
```

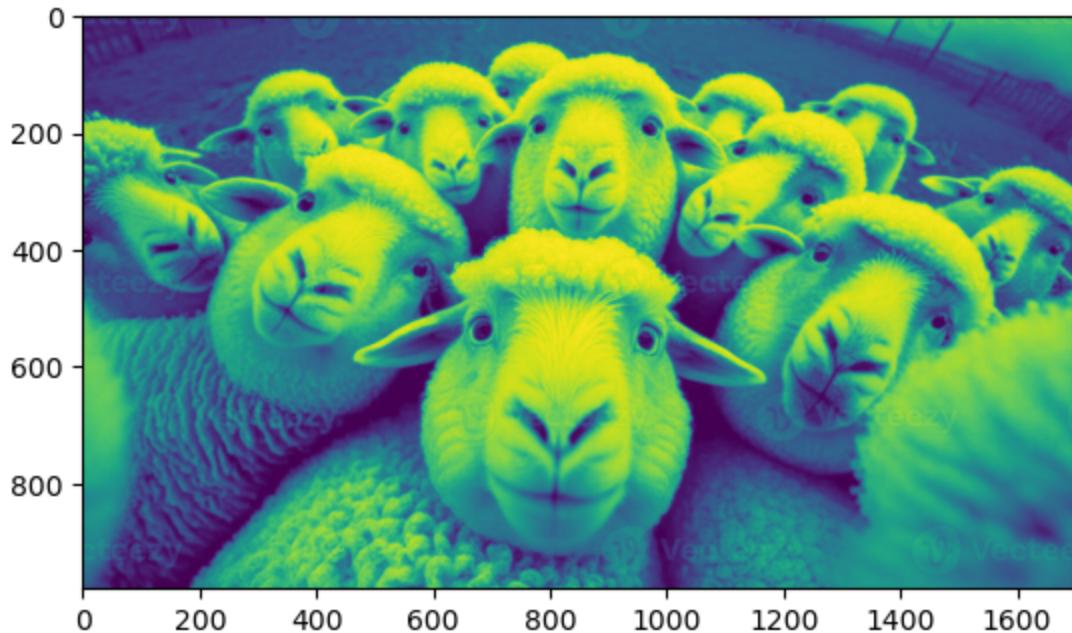
```
In [138... plt.imshow(sheep_arr)
plt.show()
```



```
In [140...]: sheep_arr.shape
```

```
Out[140...]: (980, 1699, 3)
```

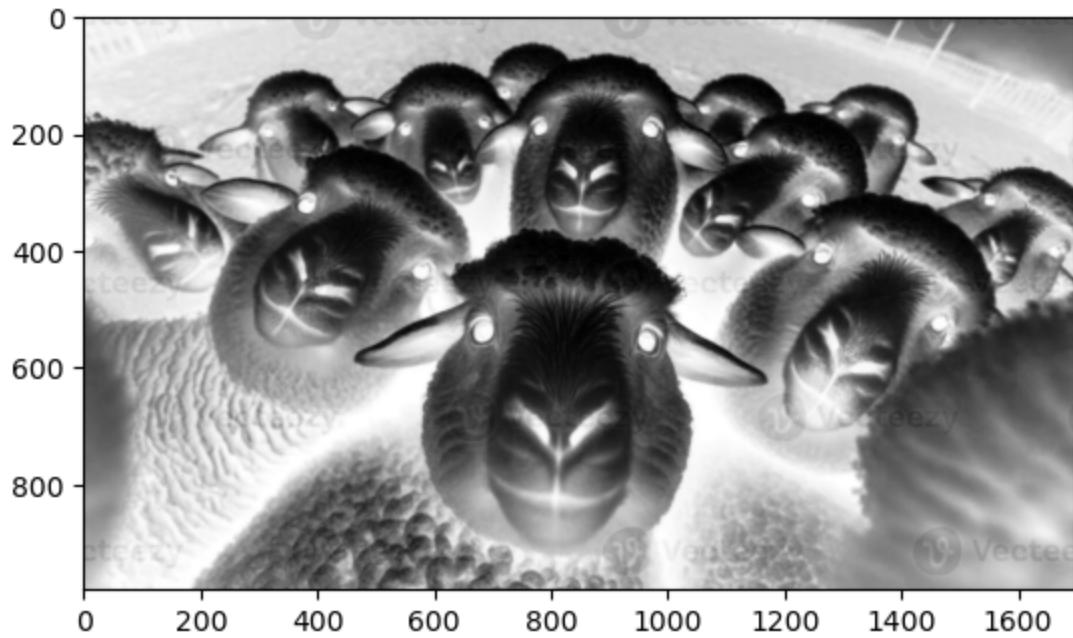
```
In [144...]: plt.imshow(sheep_arr[:, :, 0])
plt.show()
```



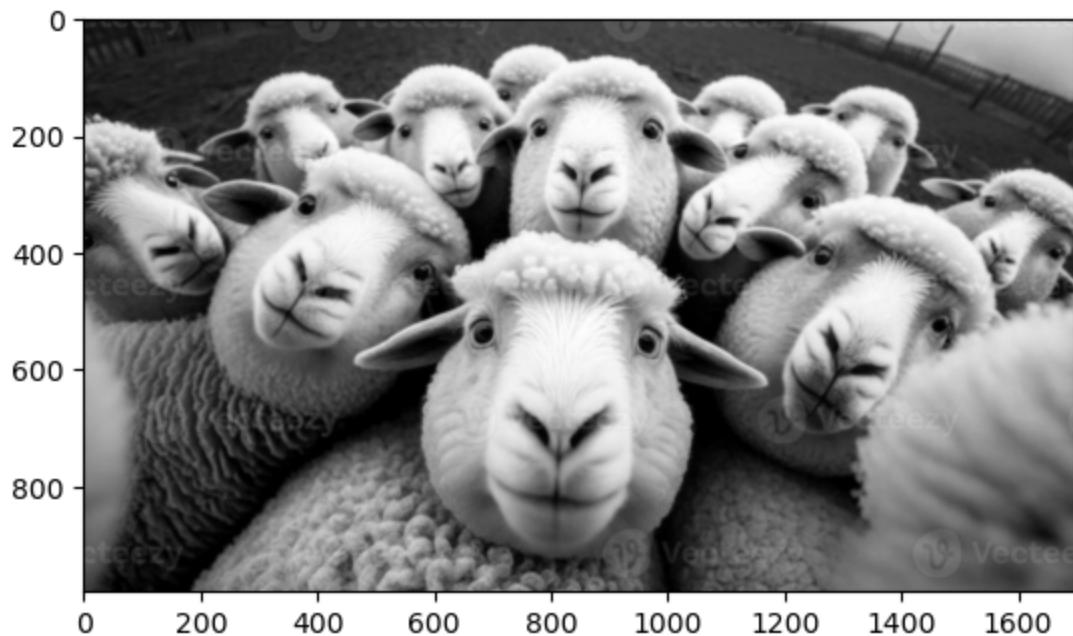
```
In [152...]: sheep_red[:, :, 0]
```

```
Out[152... array([[ 38,  39,  44, ..., 181, 183, 186],
   [ 38,  39,  43, ..., 186, 188, 191],
   [ 39,  39,  42, ..., 189, 190, 192],
   ...,
   [ 78,  78,  77, ...,  88,  88,  88],
   [ 78,  77,  77, ...,  89,  89,  89],
   [ 77,  77,  76, ...,  90,  90,  90]], dtype=uint8)
```

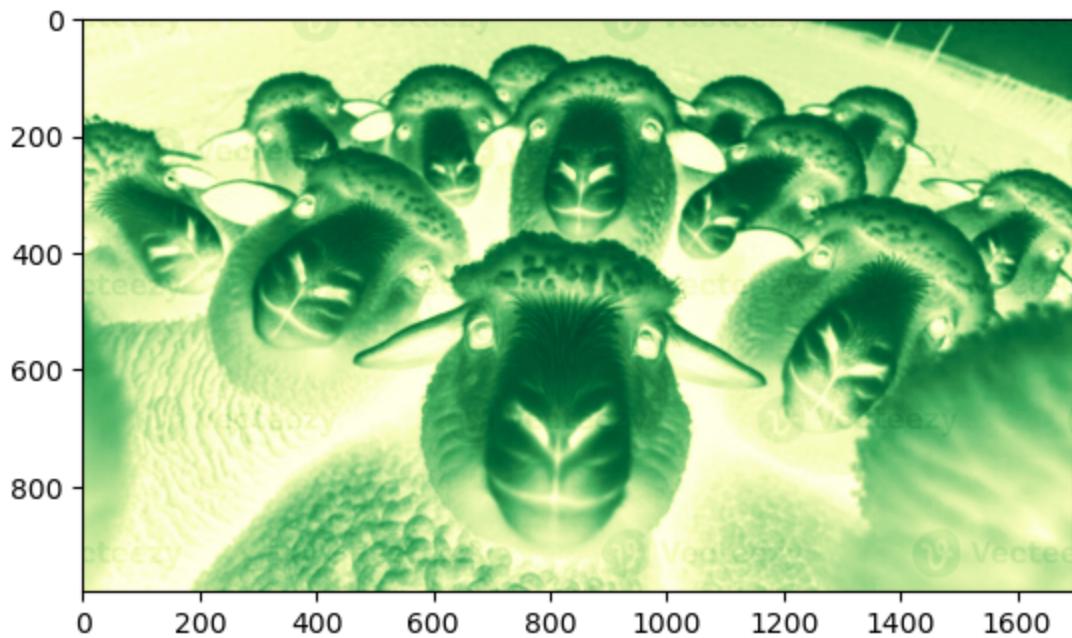
```
In [156... plt.imshow(sheep_red[:, :, 0], cmap = 'Greys')
plt.show()
```



```
In [168... plt.imshow(sheep_red[:, :, 1], cmap = 'grey')
plt.show()
```



```
In [172... plt.imshow(sheep_red[:, :, 2], cmap = 'YlGn')
plt.show()
```



```
In [178... sheep_red[:, :, 0]
```

```
Out[178... array([[ 38,  39,  44, ..., 181, 183, 186],
       [ 38,  39,  43, ..., 186, 188, 191],
       [ 39,  39,  42, ..., 189, 190, 192],
       ...,
       [ 78,  78,  77, ...,  88,  88,  88],
       [ 78,  77,  77, ...,  89,  89,  89],
       [ 77,  77,  76, ...,  90,  90,  90]], dtype=uint8)
```

```
In [180... sheep_red[:, :, 1]
```

```
Out[180... array([[ 39,  40,  45, ..., 207, 209, 212],
       [ 39,  40,  44, ..., 212, 214, 217],
       [ 40,  40,  43, ..., 215, 216, 218],
       ...,
       [ 66,  66,  65, ...,  72,  72,  72],
       [ 66,  65,  65, ...,  73,  73,  73],
       [ 65,  65,  64, ...,  74,  74,  74]], dtype=uint8)
```

```
In [182... sheep_red[:, :, 2]
```

```
Out[182... array([[ 34,  35,  40, ..., 230, 232, 235],
       [ 34,  35,  39, ..., 235, 237, 240],
       [ 35,  35,  38, ..., 238, 239, 241],
       ...,
       [ 44,  44,  43, ...,  56,  56,  56],
       [ 44,  43,  43, ...,  57,  57,  57],
       [ 43,  43,  42, ...,  58,  58,  58]], dtype=uint8)
```

```
In [184... sheep_red[:, :, 1]=0
```

```
In [186... sheep_red[:, :, 1]
```

```
Out[186... 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 [194... plt.imshow(sheep_red)  
plt.show()
```



```
In [197... sheep_red[:, :, 2]=0
```

```
In [199... sheep_red[:, :, 2]
```

```
Out[199... 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 [ ]: plt.imshow(sheep
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
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In [ ]:

In [ ]:

In [ ]: