

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

```
In [2]: ones_arr=np.ones((5,5)) # here we create the 5x5 matrix with decimal(1.)
```

```
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) #here we create the (int)5x5 matrix with wit
ones_arr
```

```
Out[4]: 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 [5]: zeros_arr=np.zeros((3,3),dtype=int) #here we create the 0(5x5) matrix without de
zeros_arr
```

```
Out[5]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [6]: ones_arr
```

```
Out[6]: 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 [7]: ones_arr*255
```

```
Out[7]: 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 [8]: zeros_arr
```

```
Out[8]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [9]: ones_arr
```

```
Out[9]: 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 [10]: import matplotlib.pyplot as plt    # it is used for visualization
```

```
In [11]: %matplotlib inline
```

```
In [12]: from PIL import Image # (%matplotlib inline)-all the picture it keep inside the  
#python imaging library
```

```
In [13]: bull_img=Image.open(r'D:\DS and AI\PROJRCTS IN DATA_SCIENCE\bull.jpg')  
bull_img
```

Out[13]:



```
In [14]: #cat_img=Image.open(r'D:\DS and AI\PROJRCTS IN DATA_SCIENCE\cat.jpeg')  
#cat_img
```

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

Out[15]: PIL.JpegImagePlugin.JpegImageFile

```
In [16]: bull_arr=np.asarray(bull_img)  
bull_arr
```

```

Out[16]: array([[114, 145, 173],
               [113, 144, 172],
               [113, 144, 173],
               ...,
               [105, 161, 198],
               [105, 161, 198],
               [106, 162, 199]],

            [[118, 148, 176],
             [114, 145, 173],
             [112, 143, 171],
             ...,
             [106, 162, 199],
             [106, 162, 199],
             [107, 163, 200]],

            [[123, 153, 181],
             [119, 149, 177],
             [114, 145, 173],
             ...,
             [105, 161, 198],
             [105, 161, 198],
             [106, 162, 199]],

            ...,

            [[ 62,  56,  24],
             [ 66,  61,  29],
             [102, 102,  68],
             ...,
             [ 85,  92,  48],
             [ 58,  67,  22],
             [ 84,  95,  52]],

            [[ 52,  46,  14],
             [ 37,  32,   0],
             [ 81,  78,  45],
             ...,
             [ 73,  82,  37],
             [ 61,  72,  29],
             [ 78,  91,  47]],

            [[ 75,  69,  37],
             [ 92,  87,  55],
             [ 86,  83,  50],
             ...,
             [ 88,  97,  54],
             [ 84,  95,  52],
             [ 82,  98,  53]]], dtype=uint8)

```

```
In [17]: type(bull_arr)
```

```
Out[17]: numpy.ndarray
```

```
In [18]: bull_arr.shape
```

```
Out[18]: (520, 652, 3)
```

```
In [19]: plt.imshow(bull_arr)  
plt.show()
```



```
In [20]: bull_red=bull_arr.copy()  
bull_red
```

```

Out[20]: array([[114, 145, 173],
               [113, 144, 172],
               [113, 144, 173],
               ...,
               [105, 161, 198],
               [105, 161, 198],
               [106, 162, 199]],

            [[118, 148, 176],
             [114, 145, 173],
             [112, 143, 171],
             ...,
             [106, 162, 199],
             [106, 162, 199],
             [107, 163, 200]],

            [[123, 153, 181],
             [119, 149, 177],
             [114, 145, 173],
             ...,
             [105, 161, 198],
             [105, 161, 198],
             [106, 162, 199]],

            ...,

            [[ 62,  56,  24],
             [ 66,  61,  29],
             [102, 102,  68],
             ...,
             [ 85,  92,  48],
             [ 58,  67,  22],
             [ 84,  95,  52]],

            [[ 52,  46,  14],
             [ 37,  32,   0],
             [ 81,  78,  45],
             ...,
             [ 73,  82,  37],
             [ 61,  72,  29],
             [ 78,  91,  47]],

            [[ 75,  69,  37],
             [ 92,  87,  55],
             [ 86,  83,  50],
             ...,
             [ 88,  97,  54],
             [ 84,  95,  52],
             [ 82,  98,  53]]], dtype=uint8)

```

```
In [21]: bull_arr==bull_red
```

```

Out[21]: 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 [22]: plt.imshow(bull_red)
plt.show()

```

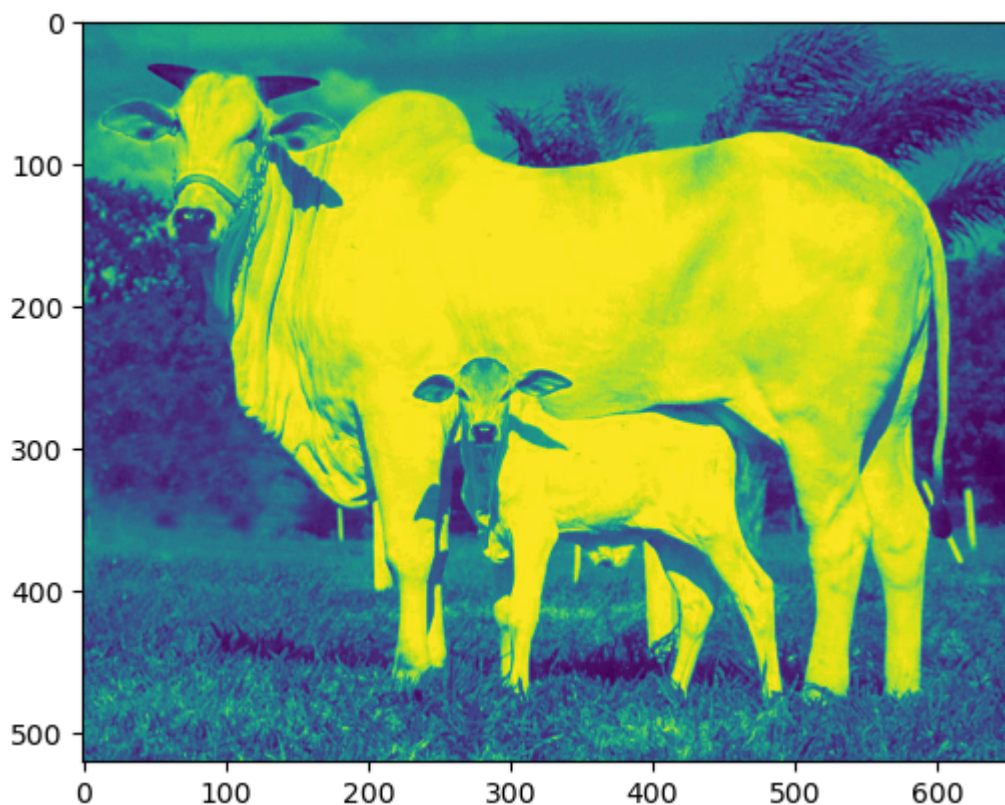




```
In [23]: bull_red.shape
```

```
Out[23]: (520, 652, 3)
```

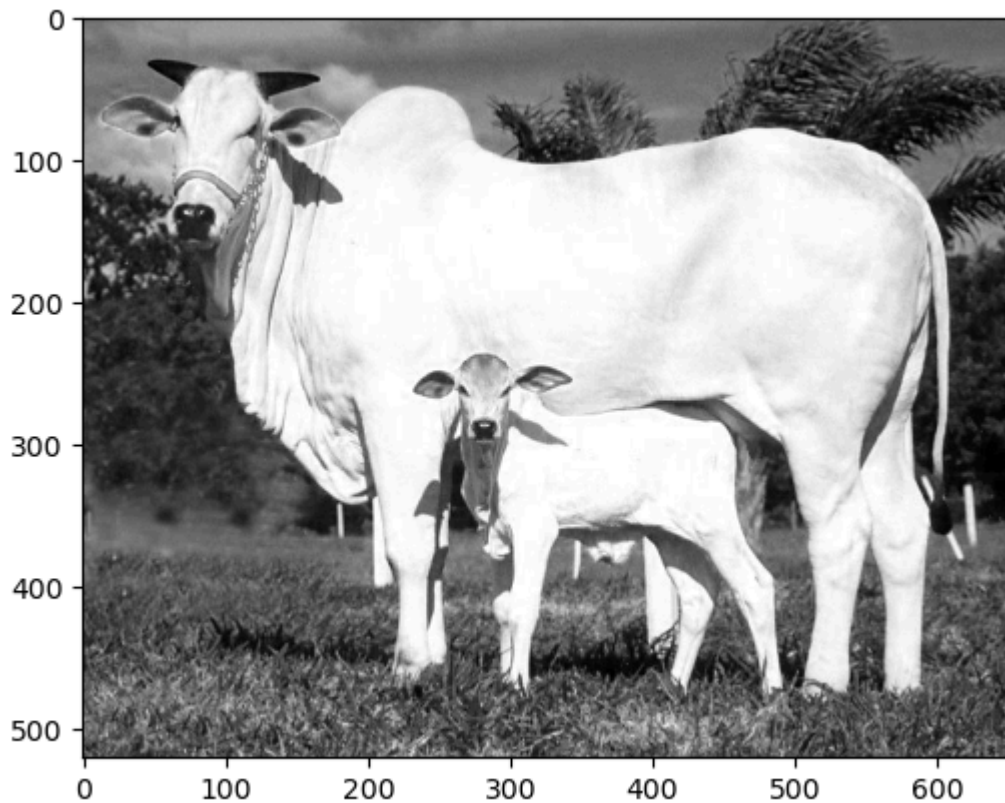
```
In [24]: # R , B , G  
plt.imshow(bull_red[:, :, 0])  
plt.show()
```



```
In [25]: bull_red[:, :, 0]
```

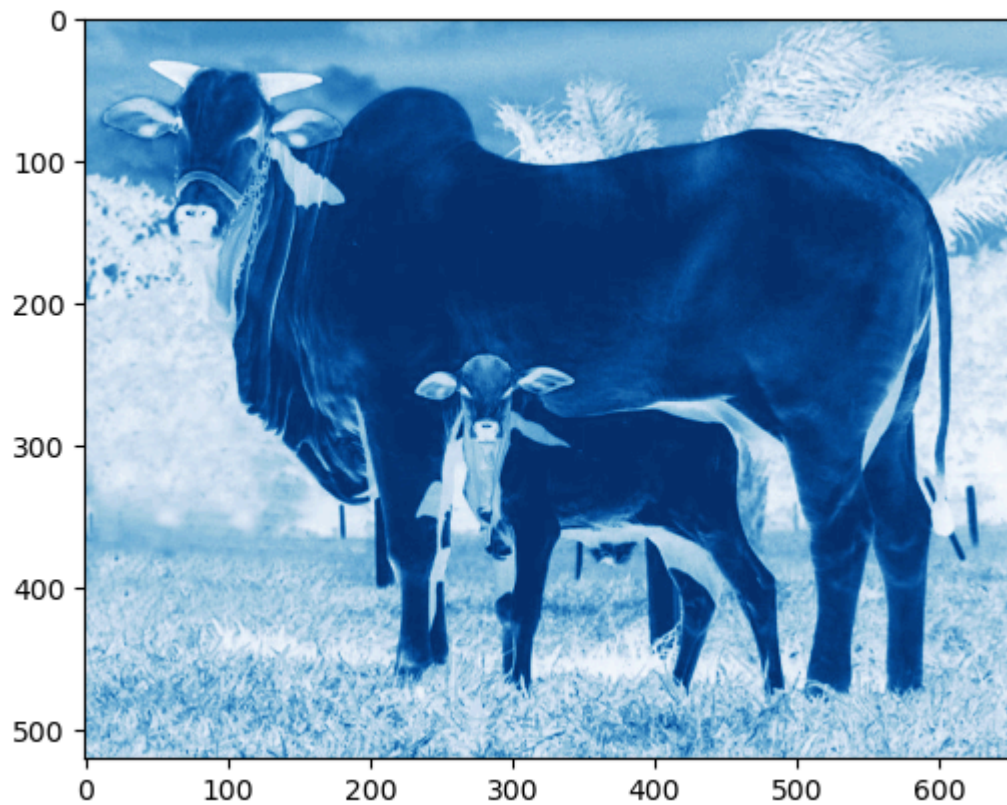
```
Out[25]: array([[114, 113, 113, ..., 105, 105, 106],
                [118, 114, 112, ..., 106, 106, 107],
                [123, 119, 114, ..., 105, 105, 106],
                ...,
                [ 62,  66, 102, ...,  85,  58,  84],
                [ 52,  37,  81, ...,  73,  61,  78],
                [ 75,  92,  86, ...,  88,  84,  82]], dtype=uint8)
```

```
In [26]: plt.imshow(bull_red[:, :, 0], cmap='gray')
plt.show()
```

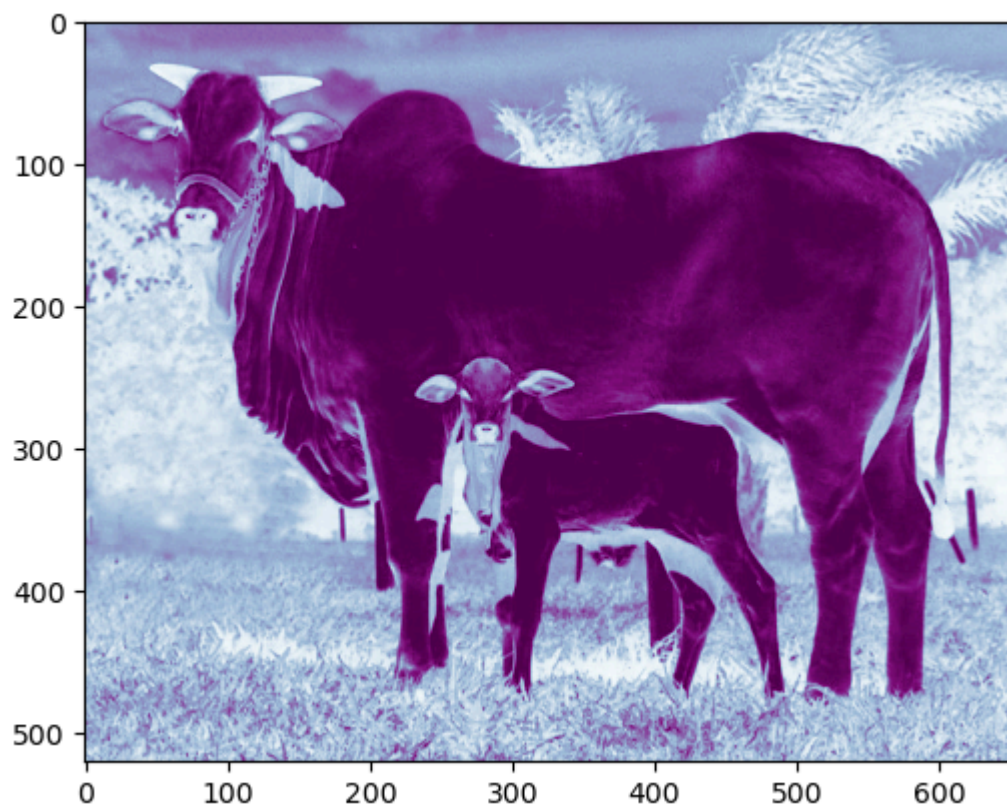


```
In [27]: plt.imshow(bull_red[:, :, 0], cmap='Blues')
plt.show()
```

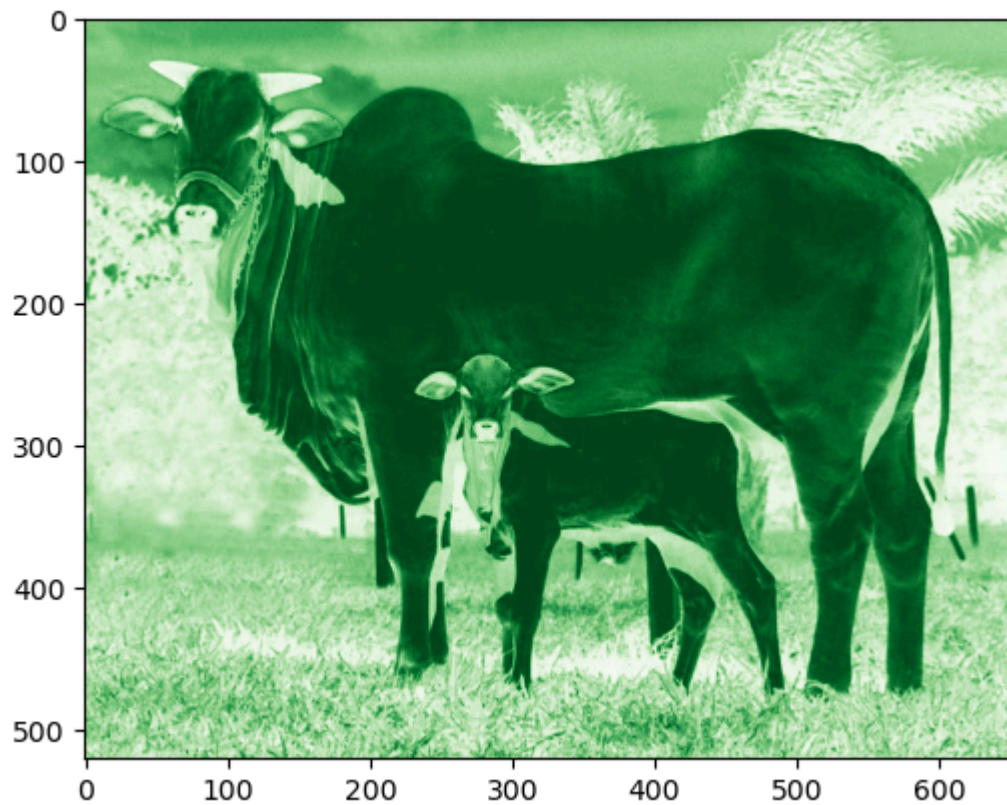




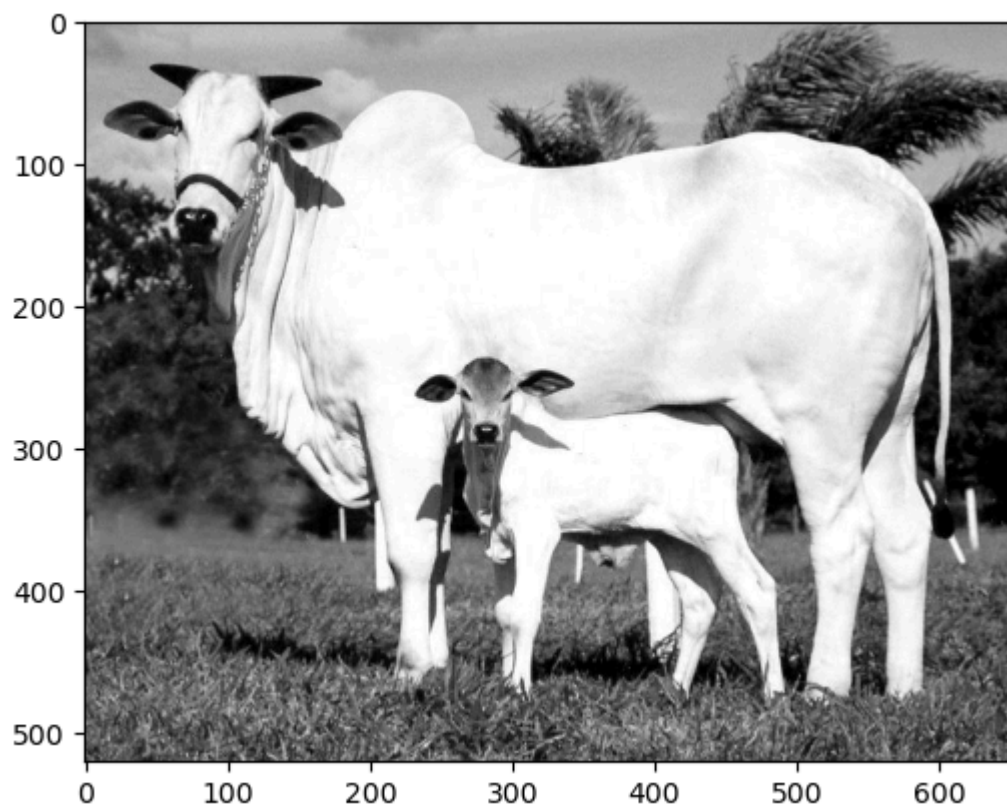
```
In [28]: plt.imshow(bull_red[:, :, 0], cmap='BuPu')  
plt.show()
```



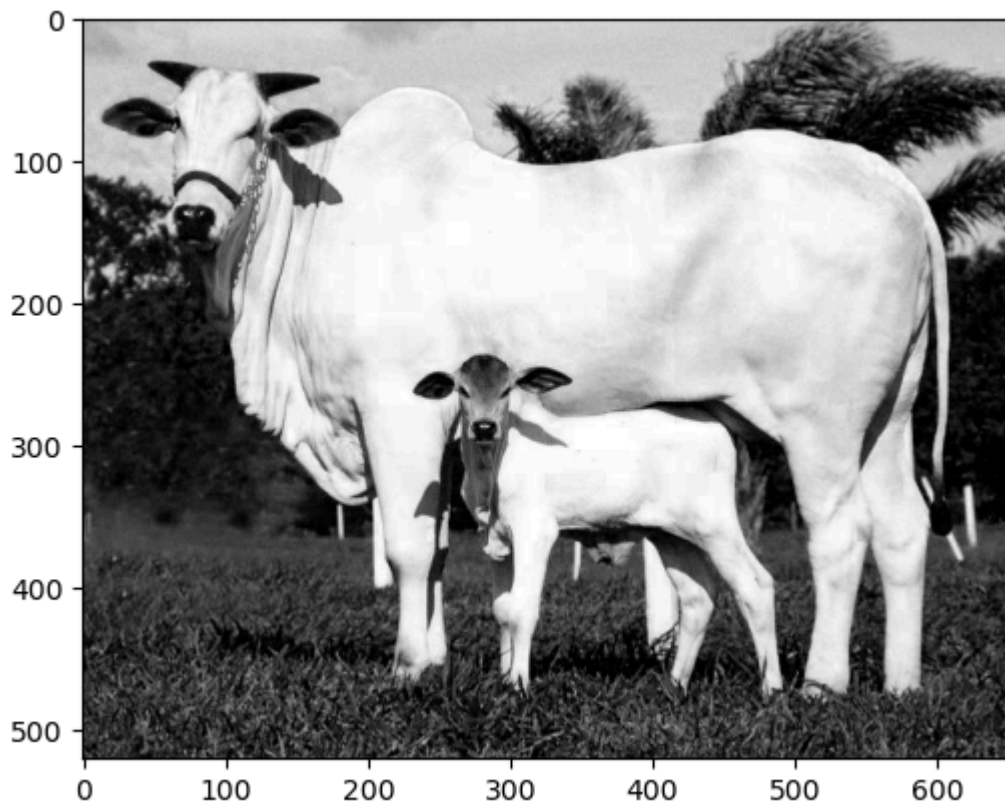
```
In [29]: plt.imshow(bull_red[:, :, 0], cmap='Greens')  
plt.show()
```



```
In [30]: plt.imshow(bull_red[:, :, 1], cmap='grey')  
plt.show()
```



```
In [31]: plt.imshow(bull_red[:, :, 2], cmap='grey')  
plt.show()
```



```
In [32]: bull_red[:, :, 0]
```

```
Out[32]: array([[114, 113, 113, ..., 105, 105, 106],
                [118, 114, 112, ..., 106, 106, 107],
                [123, 119, 114, ..., 105, 105, 106],
                ...,
                [ 62,  66, 102, ...,  85,  58,  84],
                [ 52,  37,  81, ...,  73,  61,  78],
                [ 75,  92,  86, ...,  88,  84,  82]], dtype=uint8)
```

```
In [33]: bull_red[:, :, 1]
```

```
Out[33]: array([[145, 144, 144, ..., 161, 161, 162],
                [148, 145, 143, ..., 162, 162, 163],
                [153, 149, 145, ..., 161, 161, 162],
                ...,
                [ 56,  61, 102, ...,  92,  67,  95],
                [ 46,  32,  78, ...,  82,  72,  91],
                [ 69,  87,  83, ...,  97,  95,  98]], dtype=uint8)
```

```
In [34]: bull_red[:, :, 2]
```

```
Out[34]: array([[173, 172, 173, ..., 198, 198, 199],
                [176, 173, 171, ..., 199, 199, 200],
                [181, 177, 173, ..., 198, 198, 199],
                ...,
                [ 24,  29,  68, ...,  48,  22,  52],
                [ 14,   0,  45, ...,  37,  29,  47],
                [ 37,  55,  50, ...,  54,  52,  53]], dtype=uint8)
```

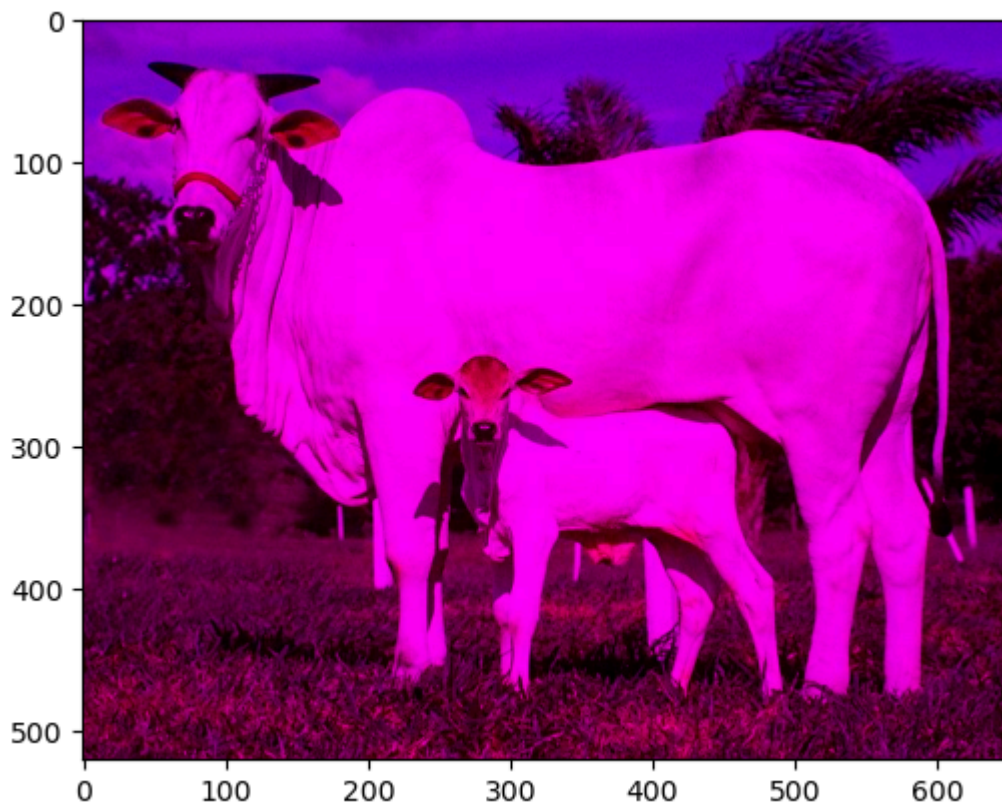
```
In [35]: bull_red[:, :, 1]=0
```

```
In [36]: bull_red[:, :, 1]
```



```
Out[36]: 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 [37]: plt.imshow(bull_red)
plt.show()
```

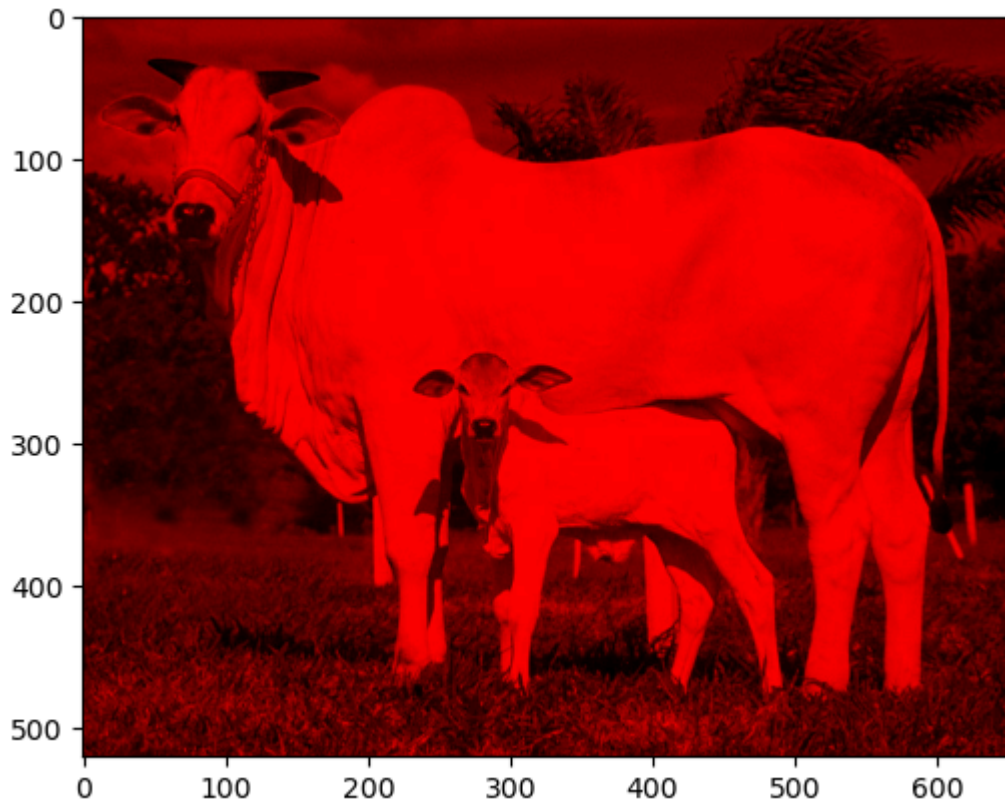


```
In [38]: bull_red[:, :, 2] = 0
```

```
In [39]: bull_red[:, :, 2]
```

```
Out[39]: 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 [40]: plt.imshow(bull_red)
plt.show()
```



```
In [41]: bull_img
```

```
Out[41]:
```



```
In [42]: arr1=np.asarray(bull_img)  
arr1
```



```

Out[42]: array([[114, 145, 173],
               [113, 144, 172],
               [113, 144, 173],
               ...,
               [105, 161, 198],
               [105, 161, 198],
               [106, 162, 199]],

            [[118, 148, 176],
             [114, 145, 173],
             [112, 143, 171],
             ...,
             [106, 162, 199],
             [106, 162, 199],
             [107, 163, 200]],

            [[123, 153, 181],
             [119, 149, 177],
             [114, 145, 173],
             ...,
             [105, 161, 198],
             [105, 161, 198],
             [106, 162, 199]],

            ...,

            [[ 62,  56,  24],
             [ 66,  61,  29],
             [102, 102,  68],
             ...,
             [ 85,  92,  48],
             [ 58,  67,  22],
             [ 84,  95,  52]],

            [[ 52,  46,  14],
             [ 37,  32,   0],
             [ 81,  78,  45],
             ...,
             [ 73,  82,  37],
             [ 61,  72,  29],
             [ 78,  91,  47]],

            [[ 75,  69,  37],
             [ 92,  87,  55],
             [ 86,  83,  50],
             ...,
             [ 88,  97,  54],
             [ 84,  95,  52],
             [ 82,  98,  53]]], dtype=uint8)

```

```
In [43]: type(arr1)
```

```
Out[43]: numpy.ndarray
```

```
In [44]: arr1.shape
```

```
Out[44]: (520, 652, 3)
```

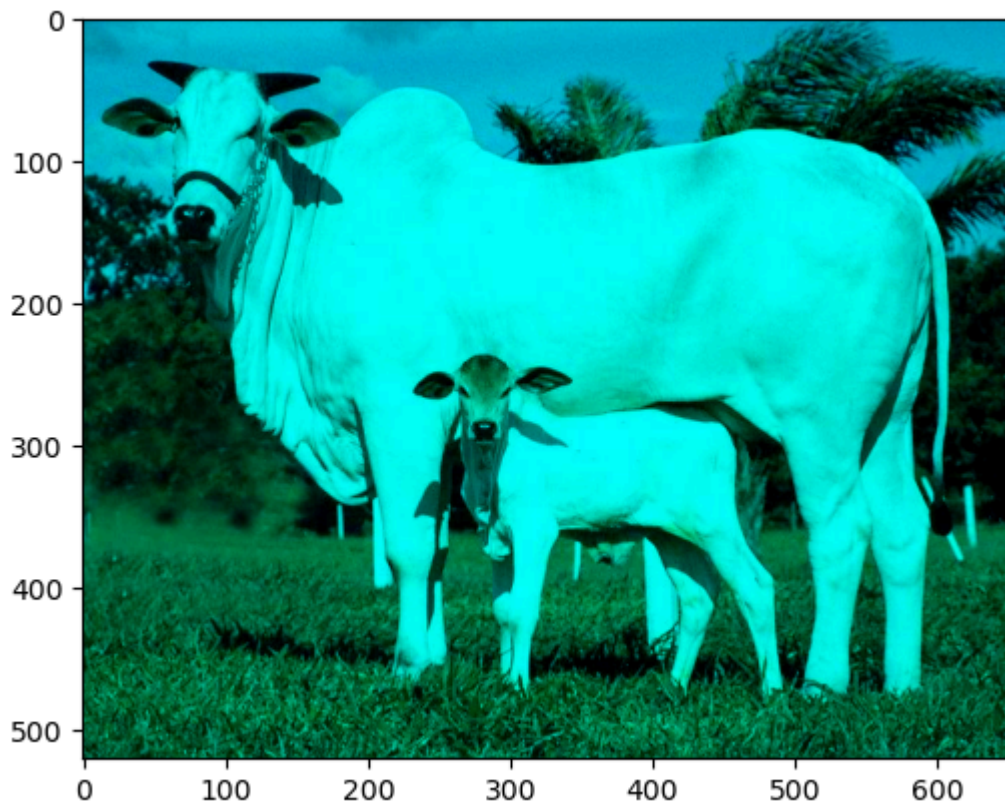
```
In [45]: plt.imshow(arr1)
plt.show()
```



```
In [46]: bull_img1 = arr1.copy()
```

```
In [47]: bull_img1[:, :, 0] = 0
```

```
In [48]: plt.imshow(bull_img1)
plt.show()
```

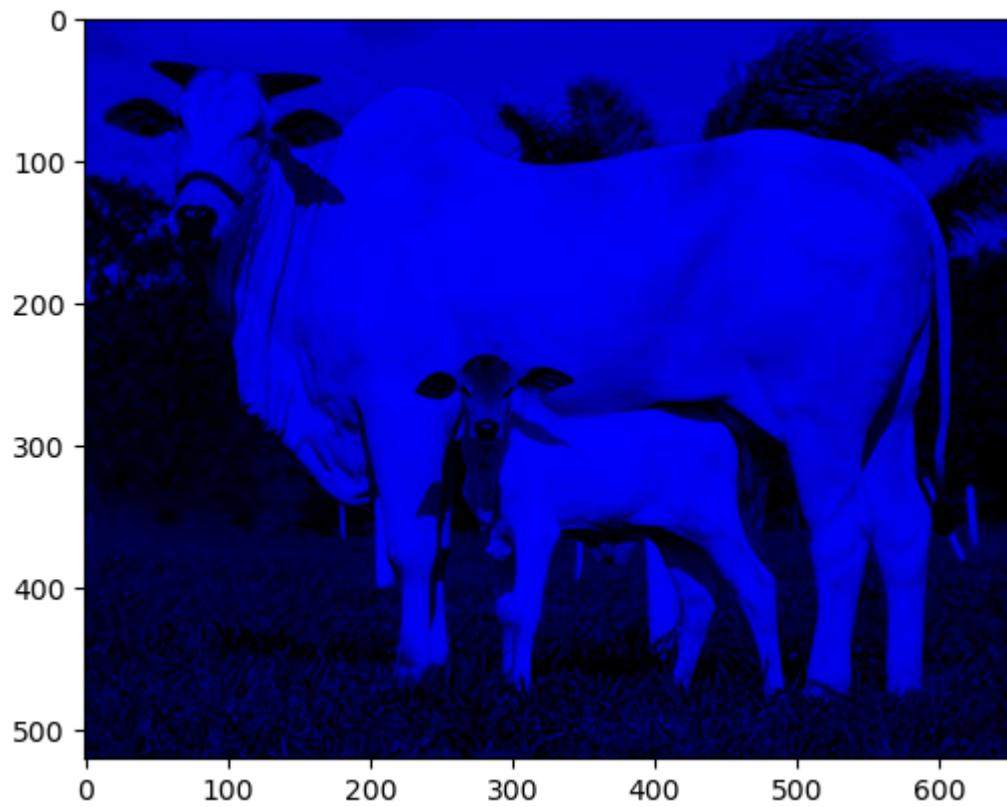


```
In [50]: bull_img1[:, :, 1]=0
```

```
In [51]: bull_img1[:, :, 1]
```

```
Out[51]: 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 [52]: plt.imshow(bull_img1)
plt.show()
```



In [ ]: