01-Images_Numpy

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1 Images and Numpy

Numpy can read in certain files types, this includes images stored as arrays. In this quick lecture, we'll quickly cover how you can work with images in NumPy. **Keep in mind, we will mainly be using OpenCV to open and view images, but later on in the Deep Learning Section we will come back to NumPy and Matplotlib.**

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

[2]:
```
import matplotlib.pyplot as plt
%matplotlib inline
```

[3]:
```
from PIL import Image
```

[4]:
```
pic = Image.open('puppy.jpg')
```

[5]:
```
pic
```

[5]:

[6]:
```
type(pic)
```

[6]:
```
PIL.JpegImagePlugin.JpegImageFile
```

[7]:
```
mat=np.array(pic)
```

[8]:
```
mat
```

[8]:
```
array([[[95, 81, 78],
        [97, 83, 80],
        [98, 84, 81],
        …,
        [25, 27, 22],
        [25, 27, 22],
        [25, 27, 22]],

       [[95, 81, 78],
        [96, 82, 79],
        [96, 82, 79],
        …,
        [25, 27, 22],
        [25, 27, 22],
        [25, 27, 22]],
```

```
[[95, 81, 78],
 [94, 80, 77],
 [94, 80, 77],
 …,
 [25, 27, 22],
 [25, 27, 22],
 [25, 27, 22]],

…,

[[19, 29, 20],
 [20, 30, 21],
 [20, 30, 21],
 …,
 [23, 30, 22],
 [24, 31, 23],
 [24, 31, 23]],

[[20, 30, 21],
 [20, 30, 21],
 [19, 29, 20],
 …,
 [23, 30, 22],
 [24, 31, 23],
 [24, 31, 23]],

[[20, 30, 21],
 [19, 29, 20],
 [19, 29, 20],
 …,
 [23, 30, 22],
 [24, 31, 23],
 [24, 31, 23]]], dtype=uint8)
```

[7]:
```
pic_arr = np.asarray(pic)
pic_arr.shape
```

[7]:
```
(1300, 1950, 3)
```

[8]:
```
plt.imshow(pic_arr)
```

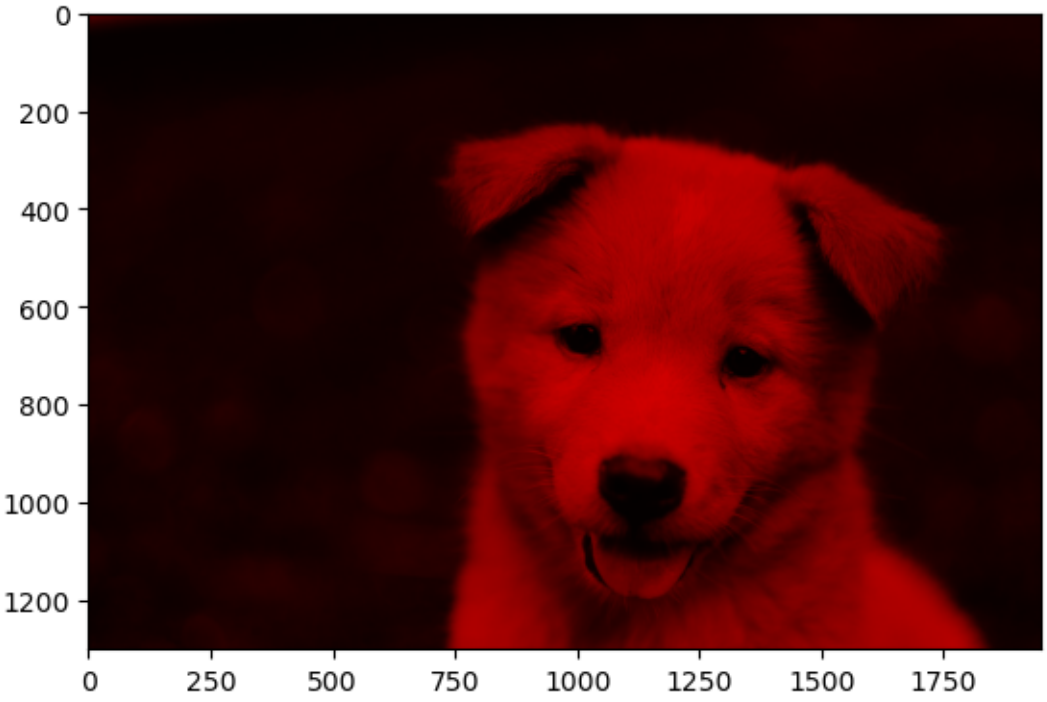
[8]:
```
<matplotlib.image.AxesImage at 0x7f7ac5552050>
```

[9]:
```
pic_red = pic_arr.copy()
```

[10]:
```
pic_red[:, :, 1] = 0    # Zero out contribution from green
pic_red[:, :, 2] = 0    # Zero out contribution from blue
```

[11]:
```
plt.imshow(pic_red)
```

[11]:
```
<matplotlib.image.AxesImage at 0x7f7ac55f5490>
```


0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750