Python Imaging Library (PIL)

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Loading an image

```
from PIL import Image


pic = Image.open('puppy01.jpg')
```

```
pic
```

```
type(pic)
```

```
PIL.JpegImagePlugin.JpegImageFile
```

Convert an image into a NumPy array

```
import numpy as np
import matplotlib.pyplot as plt
from PIL import Image

pic = Image.open('puppy01.jpg')
pic_arr = np.asarray(pic)
```

```
print(pic_arr.shape)
```

```
plt.imshow(pic_arr)
```

```
(380, 570, 3)
<matplotlib.image.AxesImage at 0x1aedd9bcb30>
```

Image is a 3D array: Red, Green, Blue

```
import numpy as np
import matplotlib.pyplot as plt
from PIL import Image
pic = Image.open('puppy01.jpg')
pic_arr = np.asarray(pic)
```

```
# Red Channel
plt.imshow(pic_arr[:,:,0], cmap='gray')
```

```
# Green Channel
plt.imshow(pic_arr[:,:,1], cmap='gray')
```

```
# Blue Channel
plt.imshow(pic_arr[:,:,2], cmap='gray')
```

Red Channel

```
<matplotlib.image.AxesImage at 0x1aedda358b0>
```

Green Channel

```
<matplotlib.image.AxesImage at 0x1aeddb93140>
```

Blue Channel

```
<matplotlib.image.AxesImage at 0x1aedd9bc9e0>
```

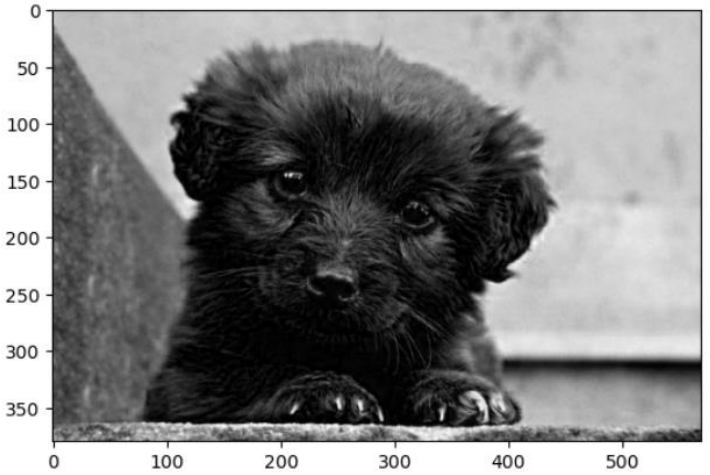

Image is a 3D array: Red, Green, Blue

```
import numpy as np
import matplotlib.pyplot as plt
from PIL import Image
pic = Image.open('puppy01.jpg')
pic_arr = np.asarray(pic)
pic_arr_copy = pic_arr.copy()

# suppress the impact of the green channel
pic_arr_copy[:,:,1] = 0
plt.imshow(pic_arr_copy)
```

Only Red and Blue Channels

```
<matplotlib.image.AxesImage at 0x1aedd9f8860>
```


```
# suppress the impact of the green channel
pic_arr_copy[:,:,1] = 0
# suppress the impact of the blue channel
pic_arr_copy[:,:,2] = 0
plt.imshow(pic_arr_copy)
```

Only Red Channel

```
<matplotlib.image.AxesImage at 0x1aede482840>
```