

```
In [1]: from sklearn.datasets import load_sample_image
import matplotlib.pyplot as plt
img = load_sample_image("flower.jpg")
plt.imshow(img)
```

```
Out[1]: <matplotlib.image.AxesImage at 0x224016fae20>
```



```
In [2]: img.shape
```

```
Out[2]: (427, 640, 3)
```

```
In [3]: img[0]
```

```
Out[3]: array([[ 2, 19, 13],
               [ 3, 18, 13],
               [ 7, 20, 13],
               ...,
               [ 1, 77, 64],
               [ 0, 76, 64],
               [ 0, 75, 63]], dtype=uint8)
```

```
In [4]: data = img/255
data[0]
```

```
Out[4]: array([[0.00784314, 0.0745098 , 0.05098039],
               [0.01176471, 0.07058824, 0.05098039],
               [0.02745098, 0.07843137, 0.05098039],
               ...,
               [0.00392157, 0.30196078, 0.25098039],
               [0.          , 0.29803922, 0.25098039],
               [0.          , 0.29411765, 0.24705882]])
```

```
In [5]: data = data.reshape(427*640,3)
data
```

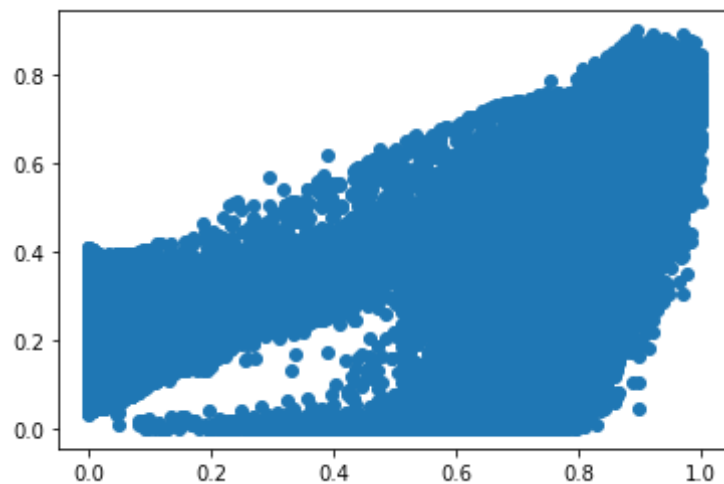
```
Out[5]: array([[0.00784314, 0.0745098 , 0.05098039],
               [0.01176471, 0.07058824, 0.05098039],
               [0.02745098, 0.07843137, 0.05098039],
               ...,
               [0.02745098, 0.18039216, 0.10980392],
               [0.03137255, 0.17647059, 0.10980392],
               [0.03529412, 0.16862745, 0.10588235]])
```

```
In [6]: data.shape
```

```
Out[6]: (273280, 3)
```

```
In [7]: plt.scatter(data[:,0],data[:,1])
```

```
Out[7]: <matplotlib.collections.PathCollection at 0x224017bb850>
```



```
In [9]: from sklearn.cluster import MiniBatchKMeans
model = MiniBatchKMeans(16)
model.fit(data)
img_pred = model.predict(data)
```

C:\Users\U.R Computer\anaconda\lib\site-packages\sklearn\cluster_kmeans.py:887: UserWarning: MiniBatchKMeans is known to have a memory leak on Windows with MKL, when there are less chunks than available threads. You can prevent it by setting batch_size >= 512 or by setting the environment variable OMP_NUM_THREADS=1
warnings.warn(

```
In [10]: new_color = model.cluster_centers_[model.predict(data)]
pred_img = new_color.reshape(img.shape)
```

```
In [11]: plt.figure(figsize=(12,10))
plt.subplot(1,2,1)
plt.imshow(img)
plt.subplot(1,2,2)
plt.imshow(pred_img)
```

Out[11]: <matplotlib.image.AxesImage at 0x22403f2fd60>

