

1.4.5 Skin whitening

Picture whitening formula:

$$p = P * 1.4(a) + b$$

Code path:

/home/pi/Yahboom_Project/1.OpenCV_course/04image_beautification/05_Skin_whitening.ipynb

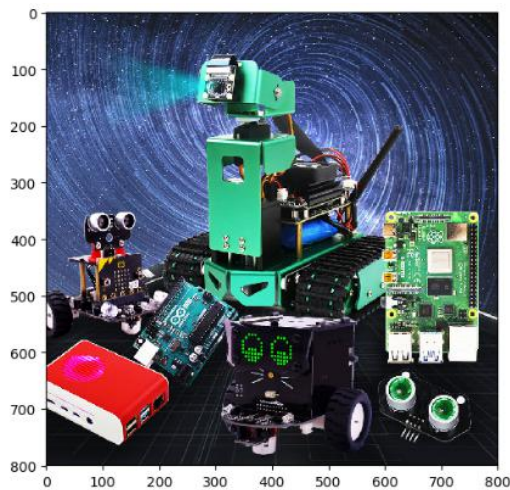
```
import cv2
import numpy as np
import matplotlib.pyplot as plt

img = cv2.imread('image0.jpg',1)
imgInfo = img.shape
height = imgInfo[0]
width = imgInfo[1]
#cv2.imshow('src',img)
dst = np.zeros((height,width,3),np.uint8)
for i in range(0,height):
    for j in range(0,width):
        (b,g,r) = img[i,j]
        bb = int(b*1.3) + 10
        gg = int(g*1.2) + 15

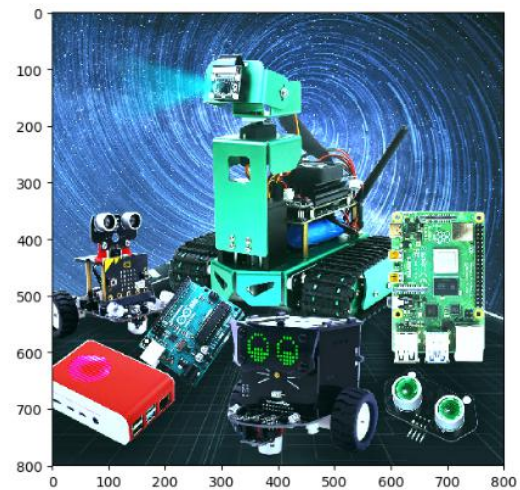
        if bb>255:
            bb = 255
        if gg>255:
            gg = 255

        dst[i,j] = (bb,gg,r)
# cv2.imshow('dst',dst)
# cv2.waitKey(0)
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
dst = cv2.cvtColor(dst, cv2.COLOR_BGR2RGB)
plt.figure(figsize=(14, 6), dpi=100) # Set the size and pixels of the drawing area
plt.subplot(121) # The first in a row and two columns
plt.imshow(img)
plt.subplot(122) # The second in a row and two columns
plt.imshow(dst)
plt.show()
```

After running the above program, two pictures will be displayed in the jupyterLab control interface, as shown below.



[Original picture]



[Skin whitening picture]

Bilateral filtering is a nonlinear filtering method. This method can only filter out low-frequency information better.

The code is as follows,

```
import cv2

import matplotlib.pyplot as plt

img = cv2.imread('yahboom.jpg',1)

#cv2.imshow('src',img)

dst = cv2.bilateralFilter(img,15,35,35)

# cv2.imshow('dst',dst)

# cv2.waitKey(0)

img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)

dst = cv2.cvtColor(dst, cv2.COLOR_BGR2RGB)

plt.figure(figsize=(14, 6), dpi=100) # Set the size and pixels of the drawing area

plt.subplot(121) # The first in a row and two columns

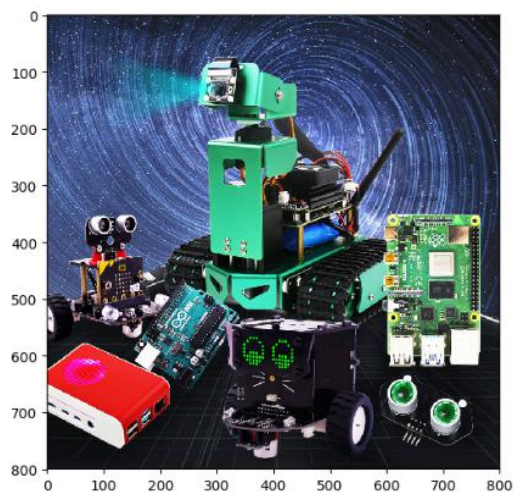
plt.imshow(img)
```

```
plt.subplot(122) # The second in a row and two columns
```

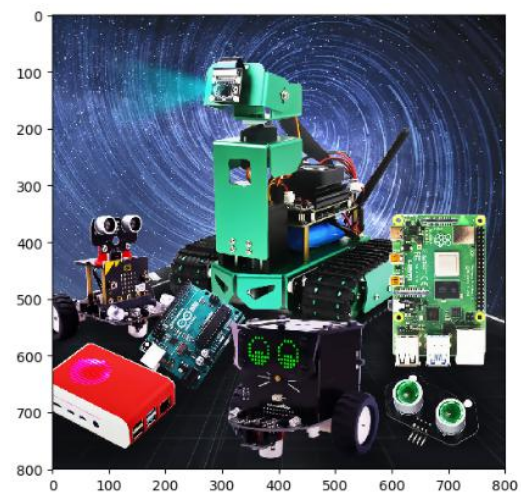
```
plt.imshow(dst)
```

```
plt.show()
```

After running the above program, two pictures will be displayed in the jupyterLab control interface, as shown below.



[Original picture]



[Skin whitening picture]