3. Image inpainting

3.1. Image inpainting

Image inpainting is a class of algorithms in computer vision that aims to fill in regions within an image or video. The region is identified using a binary mask, and the filling is usually done based on the boundary information of the region to be filled. The most common application of image inpainting is to restore old scanned photos. It is also used to remove small unwanted objects in an image.

cv2.inpaint(src, inpaintMask, inpaintRadius, flags)

Parameter definition:

src: source image

inpaintMask: binary mask indicating the pixels to be inpainted.

inpaintRadius: indicates the radius of the inpaint

flags: inpainting algorithm, mainly INPAINT_NS (Navier-Stokes based method) or INPAINT_TELEA (Fast marching based method)

Navier-Stokes based inpainting should be slower and tend to produce blurrier results than the fast marching method. In practice, we did not find this to be the case. INPAINT_NS produced better results in our tests and was slightly faster than INPAINT_TELEA.

3.2 Actual effect display

Source code path:

/home/pi/DOGZILLA_Lite_class/4.Open Source CV/D.Image_Enhancement/03_Image_Restoration.ipynb

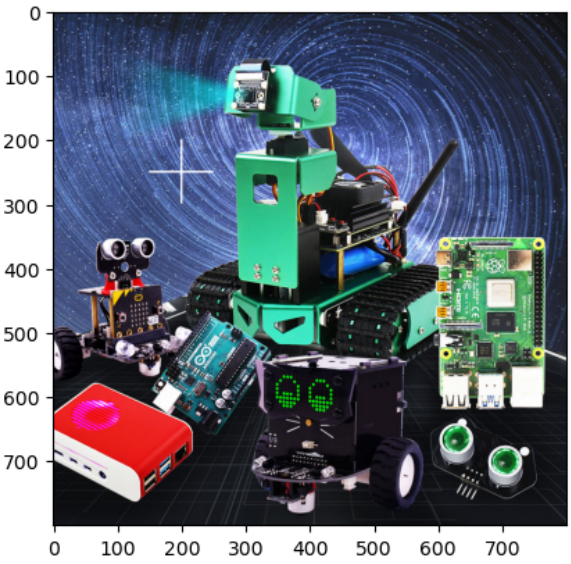
```
#尝试向原图添加破损 Try adding damage to the original image
import cv2
import numpy as np
import matplotlib.pyplot as plt


img = cv2.imread('yahboom.jpg',1)
for i in range(200,300):
    img[i,200] = (255,255,255)
    img[i,200+1] = (255,255,255)
    img[i,200-1] = (255,255,255)
for i in range(150,250):
    img[250,i] = (255,255,255)
    img[250+1,i] = (255,255,255)
    img[250-1,i] = (255,255,255)
cv2.imwrite('damaged.jpg',img)
# cv2.imshow('image',img)
```

```
# cv2.waitKey(0)
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
plt.imshow(img)
plt.show()
```

03_Image_Restoration.ipyr ●

Code

```
    img[i,200-1] = (255,255,255)
for i in range(150,250):
    img[250,i] = (255,255,255)
    img[250+1,i] = (255,255,255)
    img[250-1,i] = (255,255,255)
cv2.imwrite('damaged.jpg',img)
# cv2.imshow('image',img)
# cv2.waitKey(0)
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
plt.imshow(img)
plt.show()
```




```
#1 坏图 2 掩膜 3 inpaint  1 Bad image 2 Mask 3 Inpaint
import cv2
import numpy as np
import matplotlib.pyplot as plt

img = cv2.imread('damaged.jpg',1)
#cv2.imshow('src',img)
imgInfo = img.shape
height = imgInfo[0]
width = imgInfo[1]
paint = np.zeros((height,width,1),np.uint8)

for i in range(200,300):
    paint[i,200] = 255
    paint[i,200+1] = 255
    paint[i,200-1] = 255
for i in range(150,250):
    paint[250,i] = 255
    paint[250+1,i] = 255
    paint[250-1,i] = 255
#cv2.imshow('paint',paint)
#1 src 2 mask
imgDst = cv2.inpaint(img,paint,3,cv2.INPAINT_TELEA)
```

```
# cv2.imshow('image',imgDst)
# cv2.waitKey(0)
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
paint = cv2.cvtColor(paint, cv2.COLOR_BGR2RGB)
imgDst = cv2.cvtColor(imgDst, cv2.COLOR_BGR2RGB)


plt.figure(figsize=(14, 9), dpi=100)#设置绘图区域的大小和像素 Set the size and pixels of the drawing area
plt.subplot(131)  # 一行三列第一个  The first one in a row and three columns
plt.imshow(img)
plt.subplot(132)  # 一行三列第二个 The second one in the third column
plt.imshow(paint)
plt.subplot(133)  # 一行三列第三个 The third one in a row and three columns
plt.imshow(imgDst)

plt.show()
```