Computer Vision Homework 1

R08922079 資工所一 洪浩翔

Part 1

(a) upside-down lena.bmp

Original Lena

Upside-down Lena

(b) right-side-left lena.bmp

Original Lena

Right-side-left Lena

(c) Diagonally mirrored lena.bmp

Original Lena

Diagonally mirrored Lena

Part 2

(d) Rotate lena.bmp 45 degrees clockwise

    Use PhotoShop to deal with rotating.

Original Lena   Rotated Lena

(e) Shrink lena.bmp in half

    Use PhotoShop to deal with shrinking.

Original Lena   Shrank Lena

(f) Binarize lena.bmp at 128 to get a binary image

    Use my own code to deal with binarizing.

Original Lena   Binarized Lena

My code

```python
image = cv2.imread('lena.bmp', cv2.IMREAD_GRAYSCALE)
print('shape:', image.shape)

#a. upside-down
updown = image[::-1,:]
cv2.imwrite("upsideDown.jpg", updown)

#b. right-side-left
rightLeft = image[:,::-1]
cv2.imwrite("rightSideLeft.jpg", rightLeft)

#c. diagonally mirrored
w,h = image.shape
diagonal = np.zeros(image.shape)
for i in range(w):
    for j in range(h):
        diagonal[i,j] = image[j,i]

cv2.imwrite("diagonal.jpg", diagonal)

'''
Part 2
'''
#a. rotate
#use software to complete

#b. shrink
#use software to complete

#c. binarize
index = np.where(image>=128)
image[index] = 255
index = np.where(image<128)
image[index] = 0
cv2.imwrite("binarized.jpg", image)
```