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Project2-Edge Detection

原始程式碼

```
import cv2
import numpy as np
from matplotlib import pyplot as plt
antOrigin = cv2.imread('ant.png',0)
planeOrigin=cv2.imread('plane.png',0)
#Utility function to show image in grayscale
def showImage(image,text):
  plt.subplot(111)
  plt.imshow(image,cmap='gray')
  plt.title(text)
  plt.xticks([]), plt.yticks([])
  plt.show()
#Show origin image
def showOrigin(image):
  showImage(image, 'Original Image(grayscale)')
#Show Gaussian Blurred image
def showGaussian(image):
  image=cv2.GaussianBlur(image,(5,5),0) #(5,5) means 5*5 pixel into 1 pixel blurred
  showImage(image,'Gaussian Blurred Image(grayscale)')
#Show Equalized Histogram image
def showEqualizeHist(image):
  image=cv2.GaussianBlur(image,(5,5),0)
  image=cv2.equalizeHist(image)
  showImage(image, 'Equalized Histogram Image(grayscale)')
#Show Sobel operator filtered image
def showSobel(image):
  image=cv2.GaussianBlur(image,(5,5),0)
  # get sobel image in X and Y derivation
  sobelX=cv2.Sobel(image,-1,1,0,ksize=3) #2-nd derivation sobel operator
  sobelY=cv2.Sobel(image,-1,0,1,ksize=3)
  #get abs of image
  sobelX = cv2.convertScaleAbs(sobelX)
  sobelY = cv2.convertScaleAbs(sobelY)
  #combine image together
  image = cv2.addWeighted(sobelX, 1, sobelY, 1, 0)
  showImage(image,'Edge Image')
```

showOrigin(antOrigin) showGaussian(antOrigin) showEqualizeHist(antOrigin) showSobel(antOrigin)

showOrigin(planeOrigin) showGaussian(planeOrigin) showEqualizeHist(planeOrigin) showSobel(planeOrigin)

程式碼解說

有5個function 其中 showImage(image,text):為顯示圖片 function

剩下的為處理圖片

showGaussian(image): 將圖片做高斯模糊

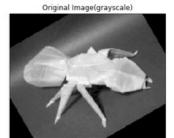
showEqualizeHist(image): 將圖片做 Euqalized histogram

showSobel(image): 將圖片做 Sobel operator filter

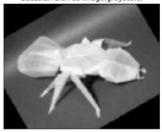
showOrigin(image): 顯示原始圖片

輸出結果

如範例圖



Gaussian Blurred Image(grayscale)



Equalized Histogram Image(grayscale)





Original Image(grayscale)



Gaussian Blurred Image(grayscale)



Equalized Histogram Image(grayscale)



Edge Image

