

第12節

Finding the edges with Canny

1

Edge

技術說明

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認識

Skimage
Canny

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熟悉

Edge
Detection

同學，歡迎你參加本課程

- ☑ 請關閉你的FB、Line等溝通工具，以免影響你上課。
- ☑ 考量頻寬，請預設關閉麥克風、攝影機，若有需要再打開。
- ☑ 隨時準備好，老師會呼叫你的名字進行互動。
- ☑ 如果有緊急事情，你必需離開線上教室，請用聊天室私訊給老師，以免老師癡癡呼喚你的名字。
- ☑ 先倒好水、上個洗手間，準備上課囉^^

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那是因為
你還沒學過Python!

(線上老師 **LIVE** 直播教學 · 搶先看)

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ZOOM 學員操作說明

The screenshot shows the Zoom interface with several key areas highlighted for student use:

- Annotation Menu:** A dropdown menu is open, showing options like '原始大小' (Original Size), '請求遠端控制' (Request Remote Control), '共同註記' (Annotate), and '退出全螢幕' (Exit Full Screen). The '共同註記' (Annotate) option is highlighted with an orange box and labeled with a circled '5'.
- Toolbar:** The bottom toolbar contains icons for '游鼠' (Cursor), '文字' (Text), '筆' (Pen), '橡皮' (Eraser), '格式' (Format), '撤銷' (Undo), '重做' (Redo), and '清除' (Clear). The '筆' (Pen) icon is highlighted with an orange box and labeled with a circled '5'.
- Participants Window:** A window titled '與會者 (15)' (Participants (15)) is open, showing a list of participants. The '舉手' (Raise Hand) button is highlighted with an orange box and labeled with a circled '3'.
- Bottom Bar:** The bottom bar contains icons for '解除靜音' (Unmute), '啟動視訊' (Start Video), '邀請' (Invite), '與會者' (Participants), '共享螢幕' (Share Screen), '聊天' (Chat), and '錄影' (Record). The '解除靜音' (Unmute) icon is highlighted with an orange box and labeled with a circled '4'. The '與會者' (Participants) icon is highlighted with an orange box and labeled with a circled '3'.
- Chat Window:** A chat window is open, showing a list of messages. The '聊天' (Chat) icon in the bottom bar is highlighted with an orange box and labeled with a circled '1'.
- Share Screen Window:** A window titled '共享螢幕' (Share Screen) is open, showing a list of participants. The '共享螢幕' (Share Screen) icon in the bottom bar is highlighted with an orange box and labeled with a circled '2'.

Annotations and their corresponding actions:

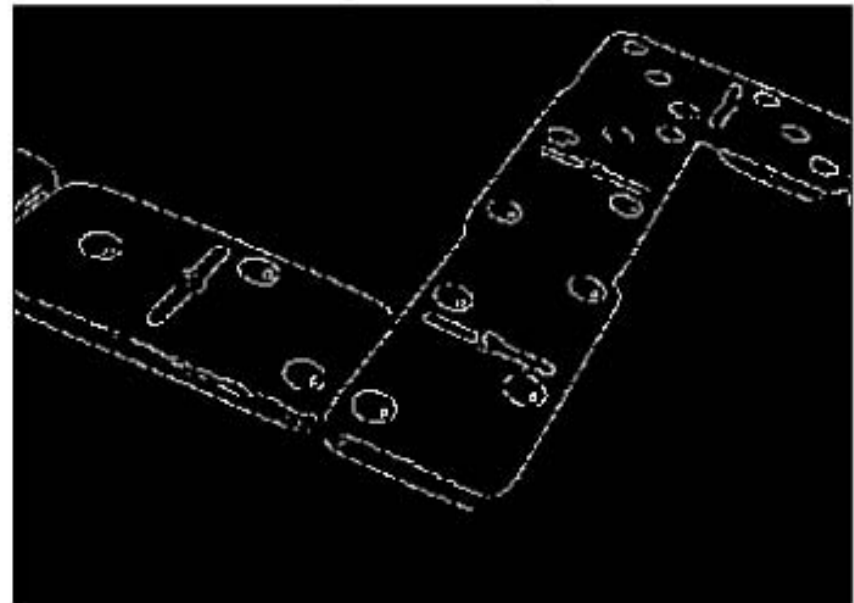
- 1 聊天** (Chat): Click the '聊天' (Chat) icon in the bottom bar.
- 2 共享螢幕** (Share Screen): Click the '共享螢幕' (Share Screen) icon in the bottom bar. (指導演練；點評作品)
老師須先停止共享螢幕
才能請學生共享螢幕
- 3 與會者/舉手** (Participants/Raise Hand): Click the '與會者' (Participants) icon in the bottom bar, then click the '舉手' (Raise Hand) button in the participants window.
- 4 解除靜音** (Unmute): Click the '解除靜音' (Unmute) icon in the bottom bar.
- 5 查看選項/共同註記/筆** (View Options/Annotate/Pen): Click the '共同註記' (Annotate) option in the dropdown menu, or click the '筆' (Pen) icon in the toolbar.

Detecting edges

Original

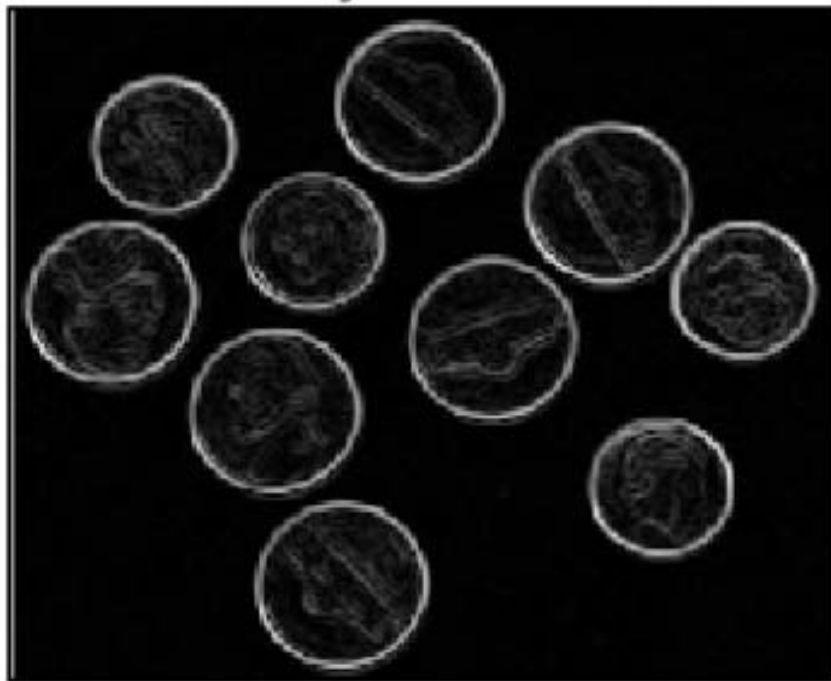


Edges with Canny

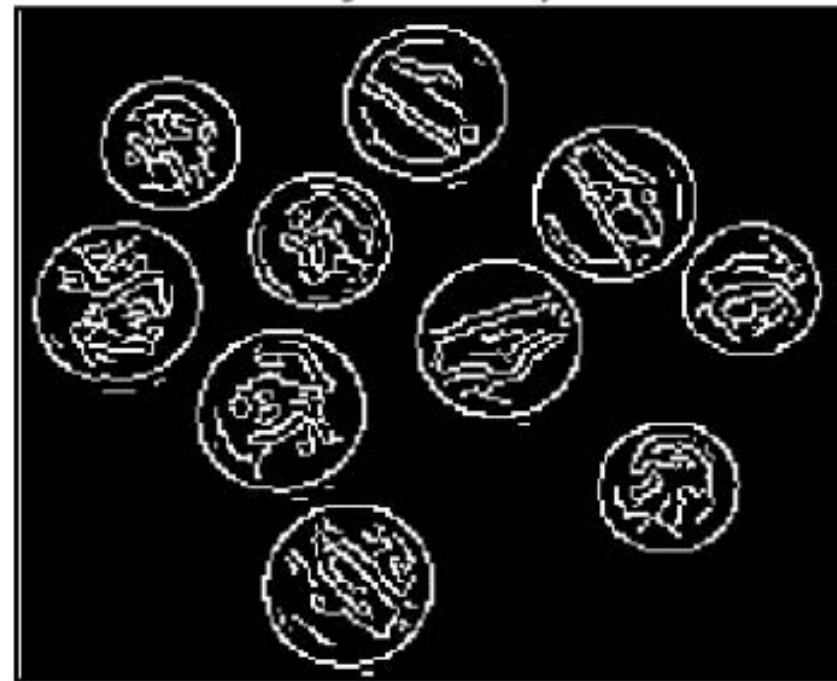


Edge detection

Edges with Sobel



Edges with Canny



Edge detection

```
from skimage.feature import canny

# Convert image to grayscale
coins = color.rgb2gray(coins)

# Apply Canny detector
canny_edges = canny(coins)

# Show resulted image with edges
show_image(canny_edges, "Edges with Canny")
```

Edge detection

Original



Edges with Canny



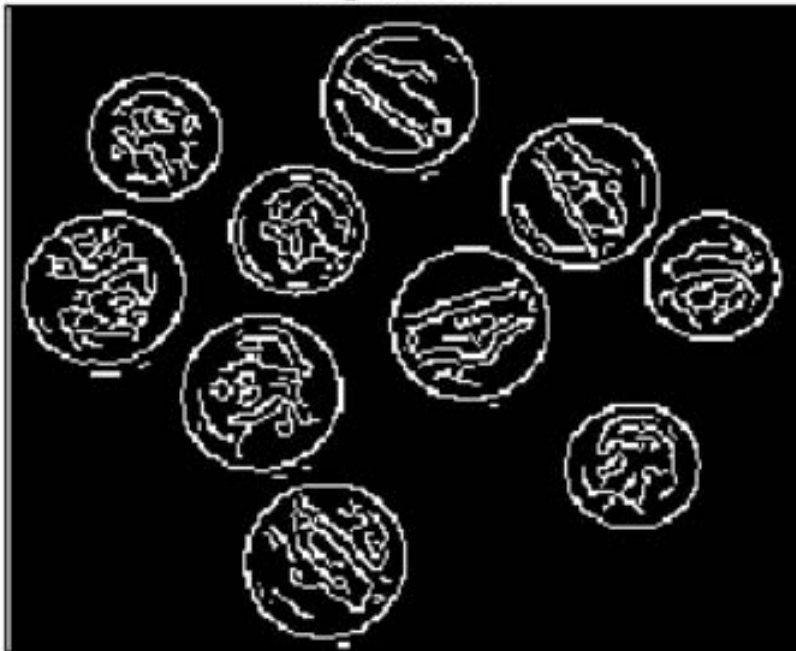
Canny edge detector

```
# Apply Canny detector with a sigma of 0.5
canny_edges_0_5 = canny(coins, sigma=0.5)

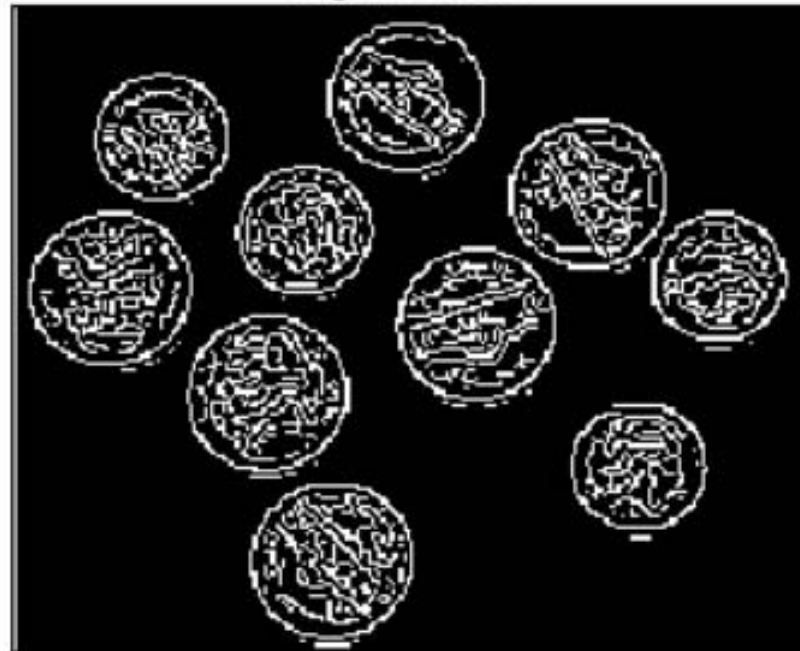
# Show resulted images with edges
show_image(canny_edges, "Sigma of 1")
show_image(canny_edges_0_5, "Sigma of 0.5")
```

Canny edge detector

Sigma of 1





Sigma of 0.5




練習時間

12.Finding the edges with Canny.ipynb



 jupyter 12.Finding the edges with Canny Last Checkpoint: 7 hours ago (autosaved)  Logout


File Edit View Insert Cell Kernel Widgets Help Trusted | Python 3 C



練習

Edges In this exercise you will identify the shapes in a grapefruit image by detecting the edges, using the Canny algorithm.

Grapefruits Image preloaded as grapefruit. The color module has already been preloaded for you.



問卷

<http://www.pcschoolonline.com.tw>

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> 課程檔案下載：

學員的「上課教材」，下載檔案為壓縮檔 ([解壓縮操作步驟](#))。
如無法觀看上課教材，請安裝 [PDF閱讀軟體](#)。

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自107年1月1日起，課程錄影檔由180天改為365天(含)內無限次觀看 (上課隔日18:00起)。

問卷

上課日期	課程名稱	課程節次	教材下載		
2017/12/27 2000 ~ 2200	線上真人-ZBrush 3D動畫造型設計	18	上課教材	錄影	課堂問卷
2017/12/20 2000 ~ 2200	線上真人-ZBrush 3D動畫造型設計	17	上課教材	錄影檔	
2017/12/18 2000 ~ 2200	線上真人-ZBrush 3D動畫造型設計	16	上課教材	錄影檔	



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