

QRcode檔案轉換器

4110060006-鄭皓

核心概念

Youtube平台沒有上傳大小限制

只要想辦法將檔案轉為影片檔，就可以上傳到Youtube

從而得到無限雲端容量

需要時將影片轉回原先檔案

大綱

上傳

將zip檔轉為QRcode

將QRcode寫入影片

上傳到Youtube



下載

下載影片

逐幀解碼

轉回zip檔

Part 1-輸出影片

檔案前處理

每一張QRcode大約可以儲存2500位元的資料

所有檔案都能夠被轉換為64進位的字串

將檔案分割為每2048位元一份

```
self.zip = open(file, 'rb')  
self.zip = self.zip.read()  
binary = base64.b64encode(self.zip)
```

```
binary = self.split(binary, 2048)
```

64bit to QRcode

將分割好的檔案個別轉換為一張QRcode

```
def to_QR(self, data):  
    qr = qrcode.QRCode(version=4,  
                        error_correction=qrcode.constants.ERROR_CORRECT_L, box_size=10, border=4)  
    qr.add_data(data)  
    qr.make(fit=True)  
    img = qr.make_image(fill_color="black", back_color="white")  
    return np.array(img).astype(np.uint8)*255
```

資料儲存方法-Linked List

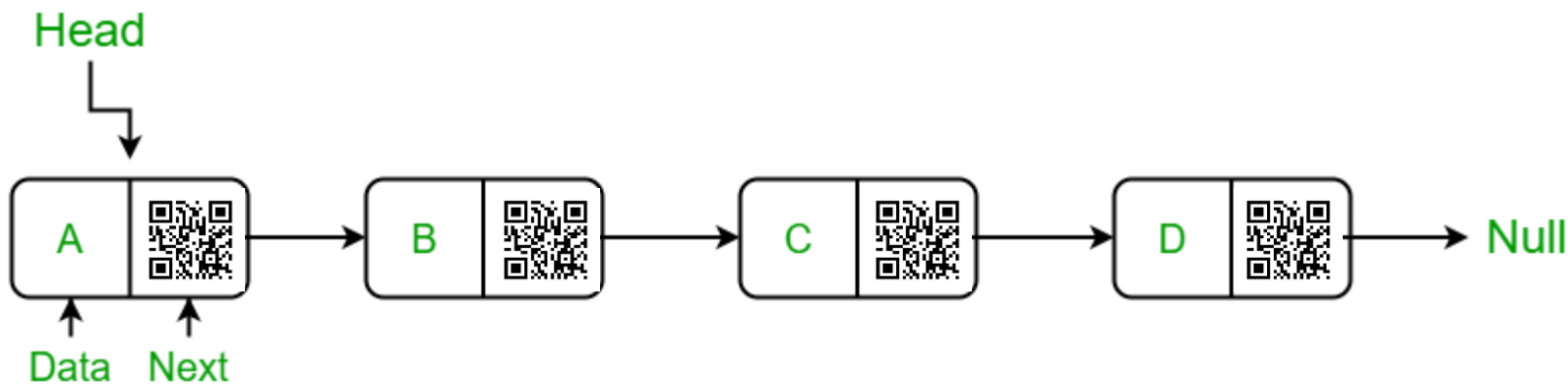
QRcode是有順序的，不需要搜尋特定元素

用Linked list可以減少記憶體

Insert也較快

將QRcode存入Linked list

```
for i in binary:  
    i = self.to_QR(i)  
    self.append(i)
```



輸出影片

一部60FPS的影片

每一幀分別是一個QRcode

```
def to_video(self):  
    out = cv2.VideoWriter('output.mp4', cv2.VideoWriter_fourcc(*'XVID'), 60, (900,900))  
  
    if self.head == None:  
        print("Empty list, please input zip file")  
        return  
  
    current = self.head  
    while current:  
        current.data = cv2.cvtColor(current.data, cv2.COLOR_GRAY2BGR)  
        current.data = cv2.resize(current.data, (900,900))  
        out.write(current.data)  
        current = current.next  
  
    out.release()  
    print("Video Finished")
```


影片範例

input.zip (only 14 days left to buy a license)

File Commands Tools Favorites Options Help

Add Extract To Test View Delete Find Wizard Info VirusScan Comment SFX

input.zip - ZIP archive, unpacked size 23,490 bytes

Name	Size	Packed	Type	Modified	CRC32
..			檔案資料夾		
4110060006.py	1,138	431	PY 檔案	2023/10/13 ...	C88E3FC0
4110060006_1.py	2,534	715	PY 檔案	2023/10/5 下...	7CEDCA0F
4110060006_2.py	1,590	530	PY 檔案	2023/10/5 下...	F727CACF
Huffman_tree.py	2,576	896	PY 檔案	2023/11/10 ...	39C56749
Week2.py	2,793	994	PY 檔案	2023/9/22 上...	F63858CB
week9 題目.py	6,944	1,913	PY 檔案	2023/12/1 上...	8743A4CA
第11週作業.py	1,142	401	PY 檔案	2023/12/14 ...	A5E2CACF
第二題 題目.py	2,838	891	PY 檔案	2023/11/3 上...	39BAC704
第八週題目.py	1,935	537	PY 檔案	2023/11/17 ...	1515B6CC

```
In [3]: runfile('C:/Code/work/Data Structure/input.py', wdir='C:/Code/work/Data Structure')
6 Image Generated
Video Finished
```

Part 2-影片轉zip

將影片逐幀放入Linked list

```
cap = cv2.VideoCapture(video)
count = 0

while cap.isOpened():
    rep, frame = cap.read()
    if rep == False:
        break
    self.append(frame)
    count+=1
```

相片解碼

```
def decode(self, img):  
    byte = pyzbar.decode(img)  
    byte = base64.b64decode(byte[0].data)  
    return byte
```

```
current = self.head  
count=0  
while current != None:  
    current.data = cv2.cvtColor(current.data, cv2.COLOR_BGR2GRAY)  
    current.data = self.decode(current.data)  
    current = current.next  
    count+=1  
  
    if count%100==0:  
        print(int((count/self.length)*100), "%")  
  
print(count, "Frame decoded")
```

將所有Linked list寫入zip檔

```
def to_zip(self, filename):  
    self.bit = bytes()  
    with open(filename, 'wb') as z:  
        current = self.head  
  
        while current != None:  
            self.bit+=current.data  
            current = current.next  
        z.write(self.bit)
```

```
In [15]: runfile('C:/Code/work/Data Structure/output.py', wdir='C:/Code/work/Data Structure')  
81 Frame decoded  
File complete!
```

解壓縮的結果會跟input一模一樣

Thank you!