

Python Final Project

Topic : GUI Application & OPEN-CV



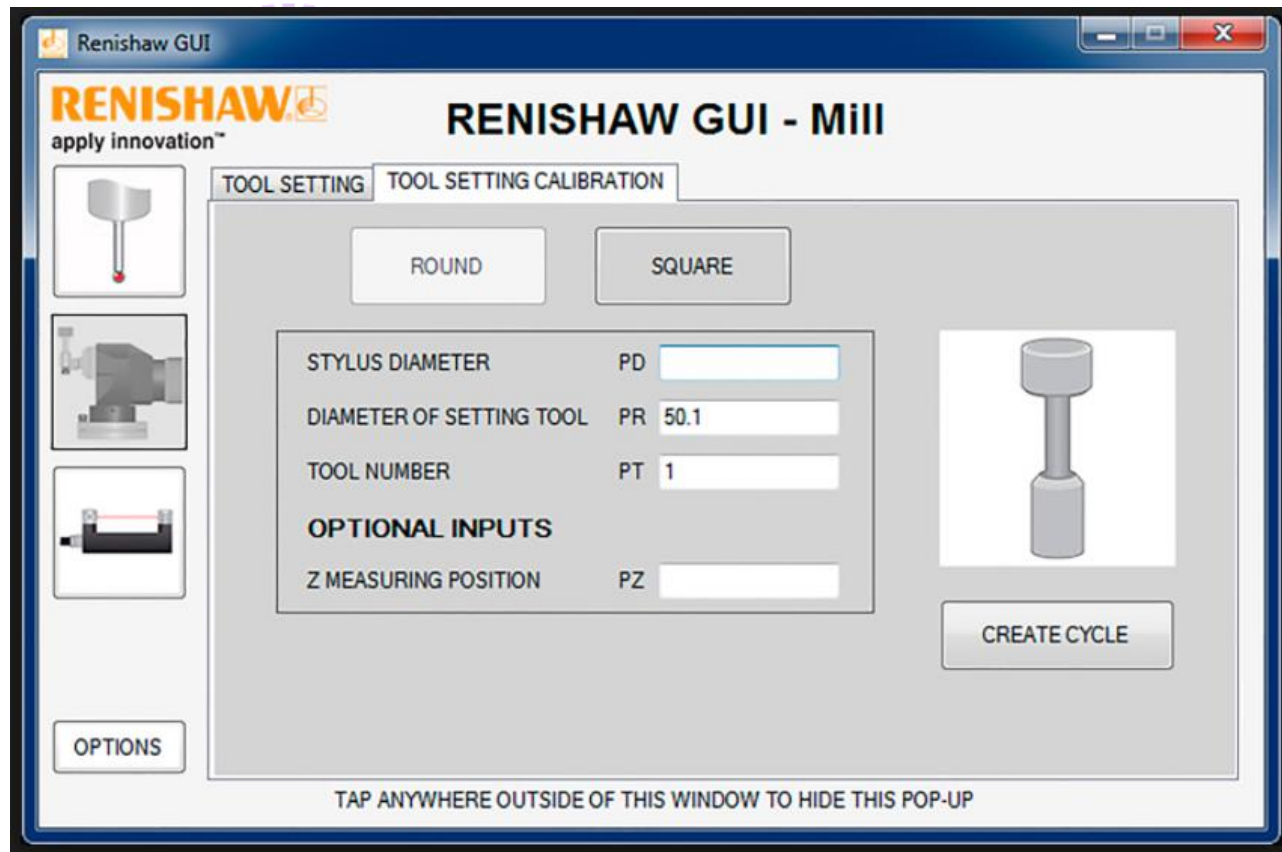
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What is GUI

GUI(Graphical User Interface):

採用圖形方式顯示的電腦操作用戶介面。



GUI Design

```
1 # -*- coding: utf-8 -*-
2 """
3 Created on Wed Jan 31 22:02:04 2018
4
5 @author: clei
6 """
7 import tkinter as tk
8 import tkinter.messagebox
9 from tkinter import ttk
10
11
12 window=tk.Tk()
13 window.title('NCTU enter verification')
14 window.geometry('800x800')
15 canvas=tk.Canvas(window,height=500,width=500)
16 image_file=tk.PhotoImage(file='welcome.gif')
17 image=canvas.create_image(0,0,anchor='nw',image=image_file)
18 canvas.pack(side='top')
19
20 x=tk.StringVar()
21 y=tk.StringVar()
22 x2=tk.StringVar()
23 y2=tk.StringVar()
24
25 i1=tk.StringVar() #姓名name
26 i2=tk.StringVar() #學號student ID
27 i3=tk.StringVar() #學校系所年級
28 i4=tk.StringVar() #GPA
29 i5=tk.StringVar() #工作地
30
31 x.set('example@gmail.com ')
32
33 tk.Label(text='Account:',font=('Arial',12)).place(x=50,y=300)
34 tk.Label(text='password: ',font=('Arial',12)).place(x=50,y=400)
35 tk.Entry(window,show=None,width=30,textvariable=x).place(x=150,y=300)
36 tk.Entry(window,show='*',width=30,textvariable=y).place(x=150,y=400)
37
38
```



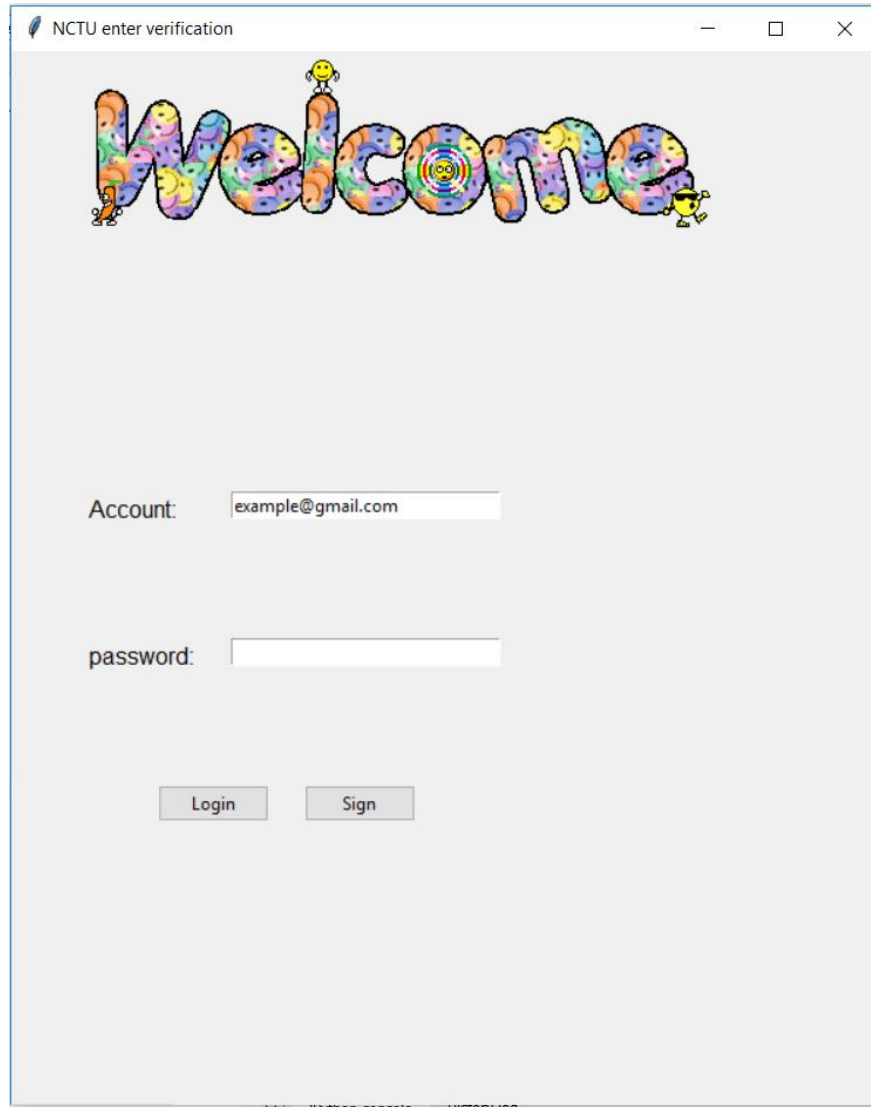
GUI Design

```
39 def login():
40     usr_name=x.get()
41     usr_pwd=y.get()
42
43     print(x.get(),y.get())
44     if (usr_name=='ray@gmail.com' and usr_pwd=='12345678'):
45         print('login success!')
46         tk.Label(text='login success!',font=('Arial',14)).place(x=50,y=600)
47
48
49     elif(usr_name==x2.get() and usr_pwd==y2.get()):
50         print('login success!')
51         tk.Label(text='login success!',font=('Arial',14)).place(x=50,y=600)
52
53         login_window=tk.Toplevel(window)
54         login_window.title('Personal data')
55         login_window.geometry('500x600')
56
57         name=i1.get()
58         ID=i2.get()
59         Degree=i3.get()
60         GPA=i4.get()
61         Company=i5.get()
62
63         tk.Label(login_window,text='Name : %s'%name,font=('Arial',14)).place(x=50,y=50)
64         tk.Label(login_window,text='ID : %s'%ID,font=('Arial',14)).place(x=50,y=150)
65         tk.Label(login_window,text='Degree : %s'%Degree,font=('Arial',14)).place(x=50,y=250)
66         tk.Label(login_window,text='GPA : %s'%GPA,font=('Arial',14)).place(x=50,y=350)
67         tk.Label(login_window,text='Company : %s'%Company,font=('Arial',14)).place(x=50,y=450)
68
69
70     else:
71         tkinter.messagebox.showinfo(title='Hi',message='User is not exist\nIf you want join us , please type Sign!')
72
73         #sign() #若密碼輸入錯, 直接跳到申請密碼畫面
74
```

GUI Design

```
75 def sign():
76     new_window=tk.Toplevel(window)
77     new_window.title('Sign up')
78     new_window.geometry('1000x1000')
79
80
81     tk.Label(new_window,text='New Account:',font=('Arial',12)).place(x=50,y=100)
82     tk.Label(new_window,text='New password: ',font=('Arial',12)).place(x=50,y=200)
83     tk.Entry(new_window,show=None,width=30,textvariable=x2).place(x=200,y=100)
84     tk.Entry(new_window,show='*',width=30,textvariable=y2).place(x=200,y=200)
85
86     tk.Label(new_window,text='Name:',font=('Arial',12)).place(x=50,y=300)
87     tk.Label(new_window,text='Student ID: ',font=('Arial',12)).place(x=50,y=400)
88     tk.Label(new_window,text='Degree:',font=('Arial',12)).place(x=50,y=500)
89     tk.Label(new_window,text='GPA: ',font=('Arial',12)).place(x=50,y=600)
90     tk.Label(new_window,text='Company:',font=('Arial',12)).place(x=50,y=700)
91
92
93     tk.Entry(new_window,show=None,width=30,textvariable=i1).place(x=200,y=300)
94     tk.Entry(new_window,show=None,width=30,textvariable=i2).place(x=200,y=400)
95     tk.Entry(new_window,show=None,width=30,textvariable=i3).place(x=200,y=500)
96     tk.Entry(new_window,show=None,width=30,textvariable=i4).place(x=200,y=600)
97     tk.Entry(new_window,show=None,width=30,textvariable=i5).place(x=200,y=700)
98
99
100 def newcode():
101     new_usr_name=x2.get()
102     new_usr_pwd=y2.get()
103     #name=i1.get()
104     #ID=i2.get()
105     #Degree=i3.get()
106     #GPA=i4.get()
107     #Compant=i5.get()
108     |
109     print(x2.get(),y2.get(),i1.get(),i2.get(),i3.get(),i4.get(),i5.get())
110     usr_name=new_usr_name
111     usr_pwd=new_usr_pwd
112
113
114     if (usr_name==x2.get() and usr_pwd==y2.get()):
115         print('You set up a account')
116         tkinter.messagebox.showinfo(title='Hi',message='You have signed up the account')
117
118
119     ttk.Button(new_window,text='Confirm',command=newcode).place(x=500,y=400)#,command=Login
120
121
122 b=ttk.Button(window,text='Login',command=login).place(x=100,y=500) #,command=Login
123 b2=ttk.Button(window,text='Sign',command=sign).place(x=200,y=500) #,command=Login
124
125 window.mainloop()
```

Results



NCTU enter verification

Welcome

Account:

password:

Login Sign

Login:登入

Sign:申辦帳號

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Results

The image displays two windows from the NCTU system. The left window, titled 'NCTU enter verification', features a large, colorful 'Welcome' text with cartoon characters. Below it are input fields for 'Account:' and 'password:'. A modal dialog box is open in the center, titled 'Hi', with an information icon and the message: 'User is not exist. If you want join us, please type Sign!'. At the bottom of the dialog is an 'OK' button. Below the input fields are two buttons: 'Login' (highlighted with a red box) and 'Sign' (highlighted with a green box). A red arrow points from the 'Login' button to the modal dialog, and a green arrow points from the 'Sign' button to the right window.

The right window, titled 'Sign up', contains the following form fields:

- New Account:
- New password:
- Name:
- Student_ID:
- Degree:
- GPA:

A 'Confirm' button is located to the right of the 'Student_ID' field.

Results

Sign up

Step.1

New Account: 123@gamil.com

New password: ***

Name: Ray

Student_ID: 0550167

Degree: NCTU EE Master

GPA: 4.0

Company: Sentons

Step.2

Confirm

Results

The image displays two side-by-side browser windows from a web application. The left window, titled 'Sign up', contains a registration form with the following fields: 'New Account:' (filled with '123@gamil.com'), 'New password:' (filled with '***'), 'Degree:' (filled with 'NCTU EE Master'), 'GPA:' (filled with '4.0'), and 'Company:' (filled with 'Sentons'). A confirmation dialog box is overlaid on the form, titled 'Hi', with the message 'You have signed up the account' and an 'OK' button. A red arrow points from a 'Confirm' button (highlighted with a red box) to the dialog box. The right window, titled 'NCTU enter verification', shows a 'Welcome' message with a colorful, bubbly font. Below it are 'Account:' (filled with '123@gmail.com') and 'password:' (filled with '***') fields. At the bottom are 'Login' and 'Sign' buttons.

Sign up

New Account: 123@gamil.com

New password: ***

Hi

You have signed up the account

OK

Confirm

Degree: NCTU EE Master

GPA: 4.0

Company: Sentons

NCTU enter verification

Welcome

Account: 123@gmail.com

password: ***

Login Sign

Results

The screenshot displays a web application interface. The main window, titled "NCTU enter verification", features a large, colorful, bubbly "Welcome" text at the top. Below it, there are input fields for "Account:" (containing "123@gamil.com") and "password:" (containing three asterisks). Two buttons, "Login" and "Sign", are positioned below the password field. The "Login" button is highlighted with a red rectangle, and a red arrow points from it to a secondary window titled "Personal data". Another red arrow points from the "Login" button to the text "login success!". The "Personal data" window displays the following information:

- Name : Ray
- ID : 0550167
- Degree : NCTU EE Master
- GPA : 4.0
- Company : Sentons

What is OPEN-CV

OPEV-CV（開源計算機視覺庫）可用於檢測和識別人臉，識別對象，分類視頻中的人為操作，跟踪相機移動，跟踪移動物體，提取物體的**3D**模型。



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Human Detector Design

```
face detect model.py - C:\Users\User\Desktop\face detect model.py (3.6.4)
File Edit Format Run Options Window Help
import cv2
import sys

image_file = "5.jpg"
args = sys.argv #'C:\\Users\\User\\Desktop\\face detect model.py'

print(args)

casc_path = "haarcascade_frontalface_default.xml"

faceCascade = cv2.CascadeClassifier(casc_path) #CascadeClassifier為分類器
image = cv2.imread(image_file)

gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

faces = faceCascade.detectMultiScale(
    gray,                                     #讀取照片並進行灰化
    scaleFactor=1.1,                         #檢測粒度
    minNeighbors=7,
    minSize=(30,30)
)

print(faces) #返回x,y值及寬高
print ("Found {0} faces!".format(len(faces)))

for (x,y,w,h) in faces:
    cv2.rectangle(image,(x,y),(x+w,y+h),(255,255,0),1)

    #cv2.rectangle(影像, 頂點座標, 對向頂點座標, 顏色, 線條寬度)

cv2.imshow("found",image) #顯示圖片
cv2.waitKey(0)
```

Ln: 36 Col: 0

Results

found



Python 3.6.4 Shell

File Edit Shell Debug Options Window Help

Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:04:45) [MSC v.1900 32 bit (Intel)]
on win32

Type "copyright", "credits" or "license()" for more information.

>>>

===== RESTART: C:\Users\User\Desktop\face detect model.py =====

['C:\Users\User\Desktop\face detect model.py']

```
[[283 361 61 61]
 [437 372 60 60]
 [586 364 60 60]
 [745 355 72 72]
 [131 329 70 70]]
```

Found 5 faces!