

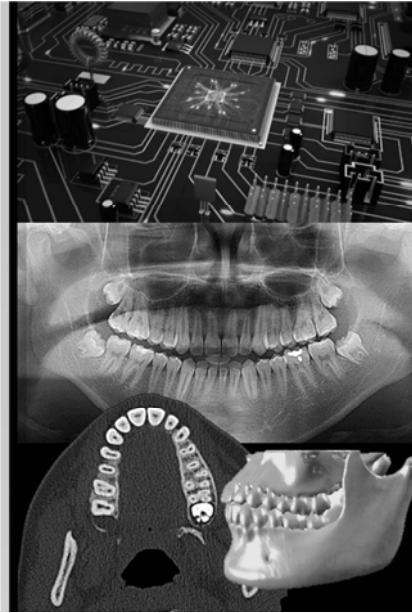
計算機概論 *for Dentist*

BUILD YOUR FIRST APPLICATION I (GRAPHIC USER INTERFACE)

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請先下載本週上課資料

- 下載網址 http://www.ym.edu.tw/~cflu/CFLu_course_DoDCompArch.html
- 下載第14週 [上課資料] [CAmaterials_L14.zip](#)

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使用GUIDE建立GUI

- Matlab guide 介紹
- GUI object 物件介紹

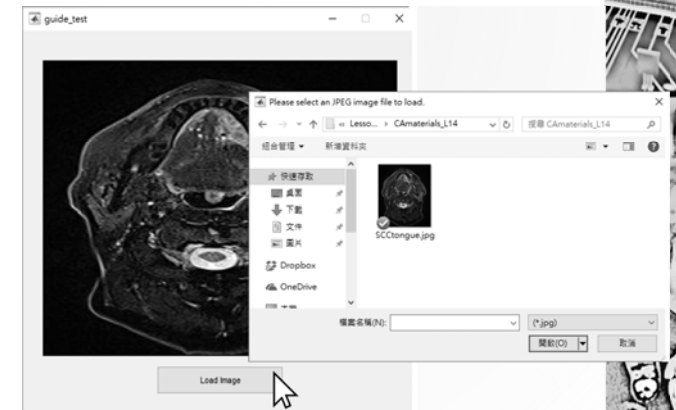
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GRAPHIC USER INTERFACE – GUI

- Create an interactive interface without coding by users.



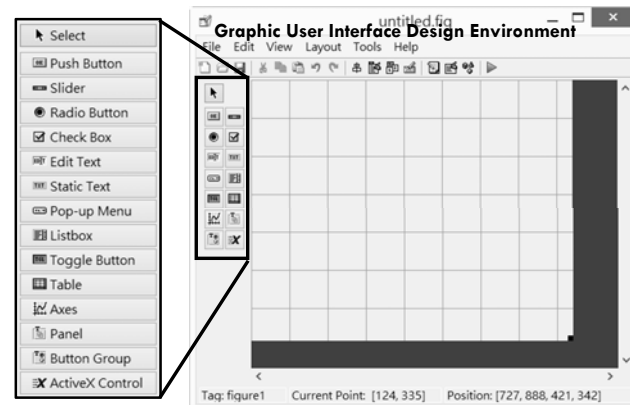
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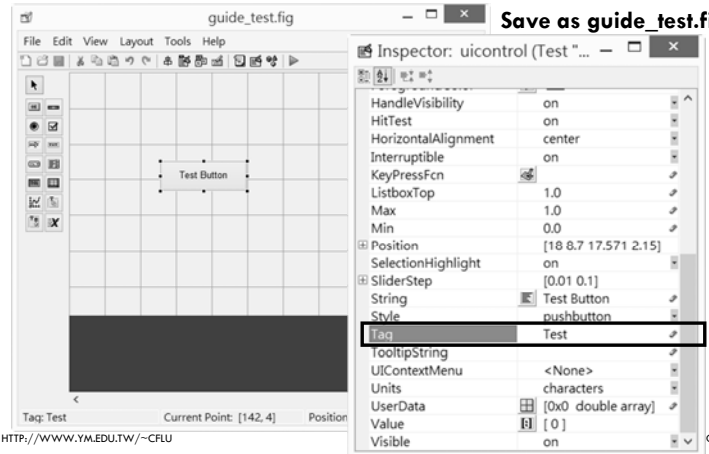
MATLAB GUIDE 介紹

MATLAB GUIDE (KEYIN **guide** IN COMMAND WINDOW)



File → Preference → GUIDE → check Show names in component palette

PROPERTIES OF AN OBJECT (DOUBLE CLICK ON IT)



handles.Test

GUIDE STRUCTURE – INITIALIZE GUI

```

27 % Begin initialization code - DO NOT EDIT
28 gui_Singleton = 1;
29 gui_State = struct('gui_Name', mfilename, ...
30 'gui_Singleton', gui_Singleton, ...
31 'gui_OpeningFcn', @guide_test_OpeningFcn, ...
32 'gui_OutputFcn', @guide_test_OutputFcn, ...
33 'gui_LayoutFcn', [], ...
34 'gui_Callback', []);
35 if nargin && ischar(varargin{1})
36     gui_State.gui_Callback = str2func(varargin{1});
37 end
38
39 if nargin
40     [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
41 else
42     gui_mainfcn(gui_State, varargin{:});
43 end
44 % End initialization code - DO NOT EDIT
    
```

Put *.m and *.fig together or error!!

GUIDE STRUCTURE – INITIALIZE GUI

```

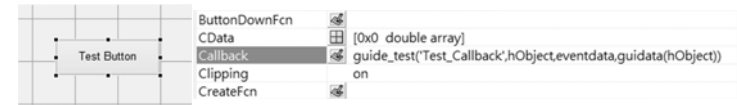
47 % --- Executes just before guide_test is made visible.
48 function guide_test_OpeningFcn(hObject, eventdata, handles, varargin)
49 % This function has no output args, see OutputFcn.
50 % hObject handle to figure
51 % eventdata reserved - to be defined in a future version of MATLAB
52 % handles structure with handles and user data (see GUIDATA)
53 % varargin command line arguments to guide_test (see VARARGIN)
54
55 % Choose default command line output for guide_test
56 handles.output = hObject;
57 % Create other objects here!!
58 % Update handles structure
59 guidata(hObject, handles);
60
61 % UIWAIT makes guide_test wait for user response (see UIRESUME)
62 % uiwait(handles.figure1);
    
```

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GUIDE STRUCTURE – CALLBACK



```

76 % --- Executes on button press in guide_test.
77 function Test_Callback(hObject, eventdata, handles)
78 % hObject handle to guide_test (see GCBO)
79 % eventdata reserved - to be defined in a future version of MATLAB
80 % handles structure with handles and user data (see GUIDATA)
81
82 % Add commands here!!
83
    
```

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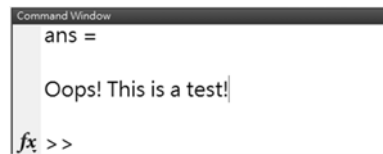
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GUIDE STRUCTURE – CALLBACK

```

76 % --- Executes on button press in Test.
77 function Test_Callback(hObject, eventdata, handles)
78 % hObject handle to Test (see GCBO)
79 % eventdata reserved - to be defined in a future version of MATLAB
80 % handles structure with handles and user data (see GUIDATA)
81 'Oops! This is a test!'
    
```

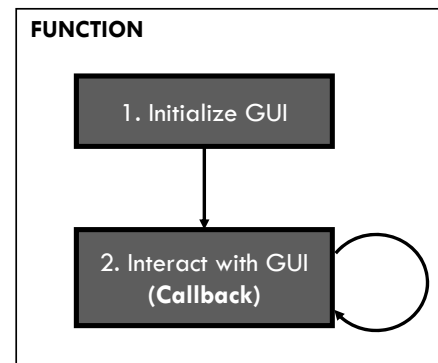


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GUIDE STRUCTURE – CALLBACK



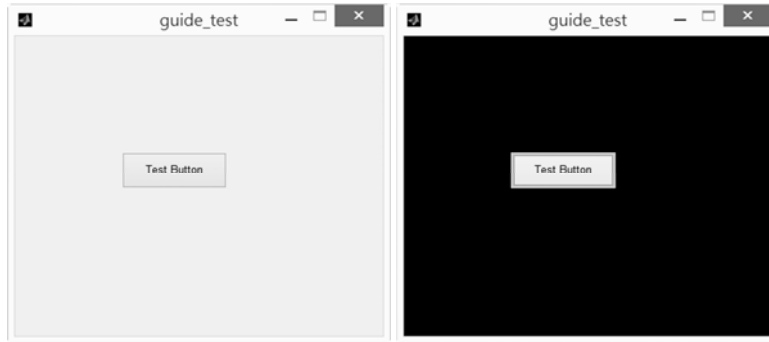
Learn how to deal with
• handle

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EXAMPLE – CHANGE FIGURE COLOR

- `set(gcf,'color',[0 0 0])`

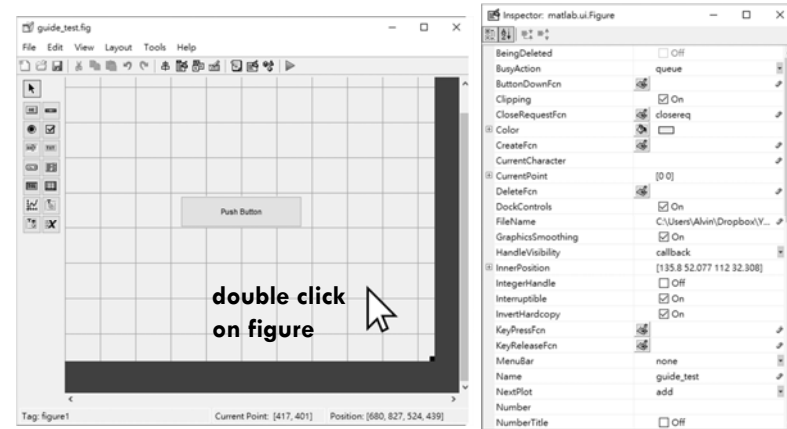


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PROPERTIES OF FIGURE



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HANDLES OF UI OBJECTS

- `gcf`: get handle of current figure
- `gca`: get handle of current axes
- `gco`: get handle of current object
- `gcbf`: get handle of callback figure
- `gcbo`: get handle of callback object

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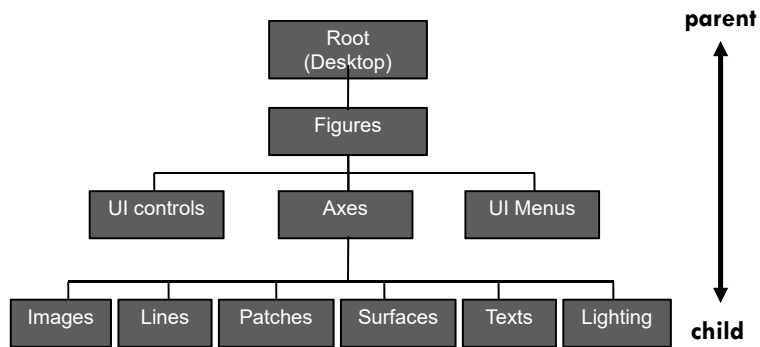
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GUI OBJECT 元件介紹

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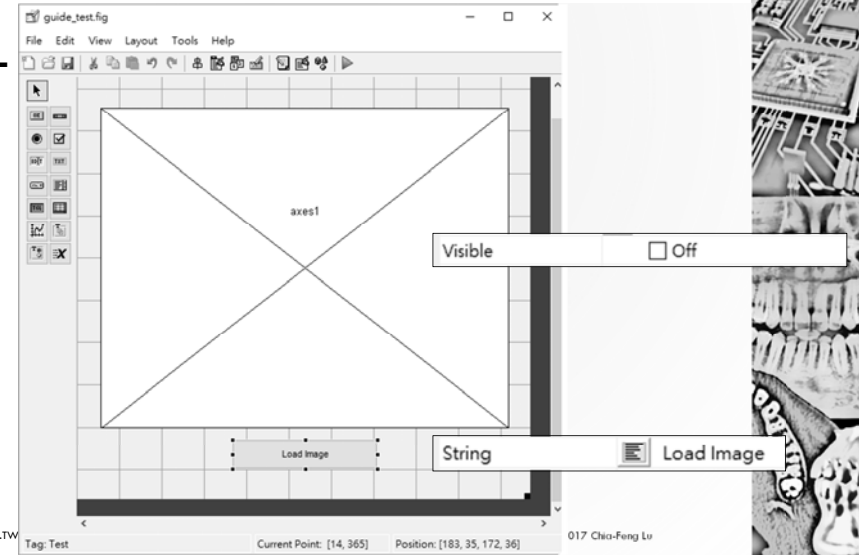
HIERARCHICAL RELATION



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TRY IT



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TRY IT



Press button to show image

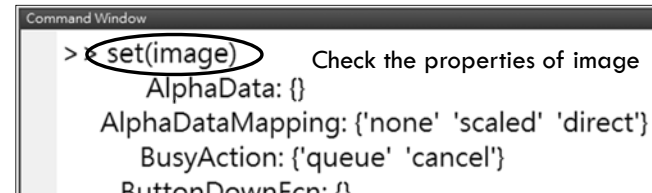
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CREATE AN IMAGE OBJECT

```

55 % Choose default command line output for guide_test
56 handles.output = hObject;
57
58 handles.image1 = image('parent', handles.axes1, ...
59 'Xdata', [], 'Ydata', [], 'Cdata', []);
  
```



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PROPERTIES OF IMAGE

```
>> set(image)
AlphaData: {}
AlphaDataMapping: {'none' 'scaled' 'direct'}
BusyAction: {'queue' 'cancel'}
ButtonDownFcn: {}
CData: {}
CDataMapping: {'scaled' 'direct'}
Children: {}
Clipping: {'on' 'off'}
CreateFcn: {}
DeleteFcn: {}
HandleVisibility: {'on' 'callback' 'off'}

HitTest: {'on' 'off'}
Interruptible: {'on' 'off'}
Parent: {}
PickableParts: {'visible' 'none' 'all'}
Selected: {'on' 'off'}
SelectionHighlight: {'on' 'off'}
Tag: {}
UIContextMenu: {}
UserData: {}
Visible: {'on' 'off'}
XData: {}
YData: {}
```

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ADD IMAGE LOAD CALLBACK

```
function Test_Callback(hObject, eventdata, handles)
% hObject handle to Test (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)
[filename,filepath]=uigetfile('*.jpg','Please select a JPEG image file to load.');
```

```
img=imread([filepath,filename]);

[row,col,layer]=size(img);
set(handles.axes1,'xlim',[1 col],'ylim',[1 row],'ydir','reverse');
set(handles.image1,'Cdata',img);
```

開啟並執行CAmaterial_L14\guide_loading.m

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THE END

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