

# MATLAB GUIDE介紹與濾波器 應用實作

盧家鋒 助理教授  
alvin4016@ym.edu.tw



<http://www.ym.edu.tw/~cflu>

11/27/2014 Lesson 10, Chia-Feng Lu

1

## 請先下載本週上課資料

- <http://www.ym.edu.tw/~cflu>
- 點選左欄 [ 課程資料 ] → [ MATLAB圖形使用者介面 ]
- 下載第10週 [ 上課資料 ] [materials\\_L10.zip](#) · 檔案大小約4.8MB

<http://www.ym.edu.tw/~cflu>

11/27/2014 Lesson 10, Chia-Feng Lu

2

## 本週內容

- MATLAB guide介紹
- 訊號濾波器GUI實作
  - 檔案輸入與管理
  - 訊號繪製與呈現
  - 訊號濾波器
  - 訊號分段與平均
  - 檔案輸出-Excel, print

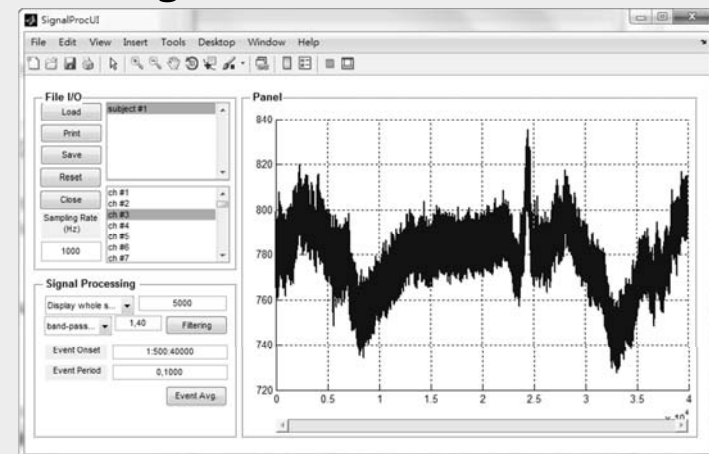


<http://www.ym.edu.tw/~cflu>

11/27/2014 Lesson 10, Chia-Feng Lu

3

## GUI design



<http://www.ym.edu.tw/~cflu>

11/27/2014 Lesson 10, Chia-Feng Lu

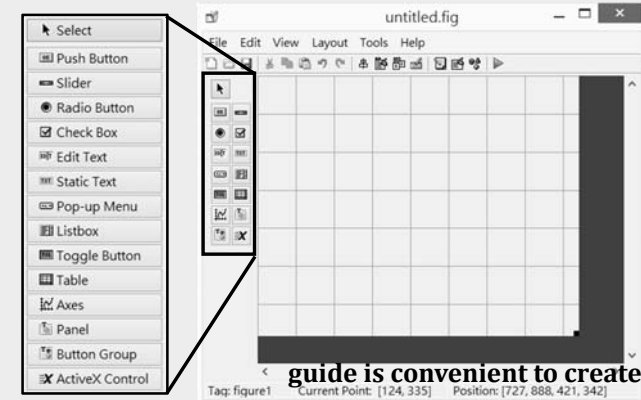
4

# MATLAB guide介紹

CF

## MATLAB guide (keyin guide in command window)

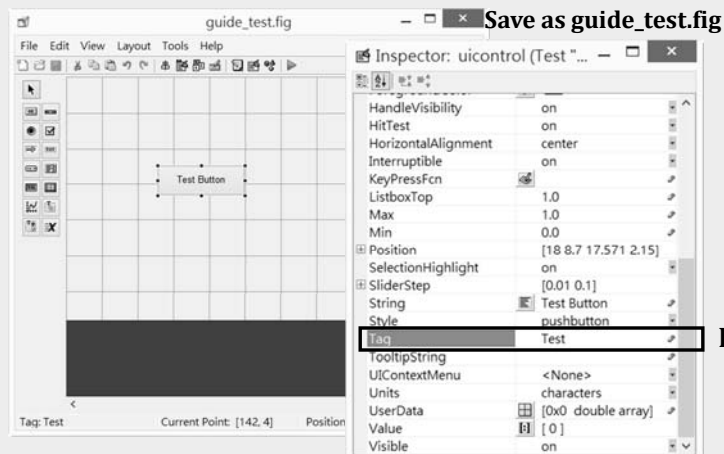
- Graphic User Interface Design Environment



guide is convenient to create but...

CF

## Properties of an Object (double click on it)



handles.Test

CF

## 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!!

CF

## guide Structure – initialize GUI

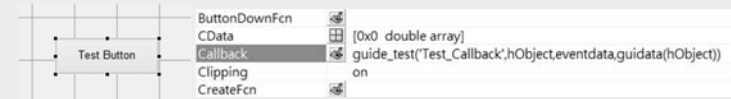
```

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
58 % Update handles structure
59 guidata(hObject, handles);
60
61 % UIWAIT makes guide_test wait for user response (see UIRESUME)
62 % uiwait(handles.figure1);
    
```

← Create other objects here!!

CF

## 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
83
    
```

← Add commands here!!

CF

## Transfer data in guide

- All object handles and Data were saved in "handles"!

```

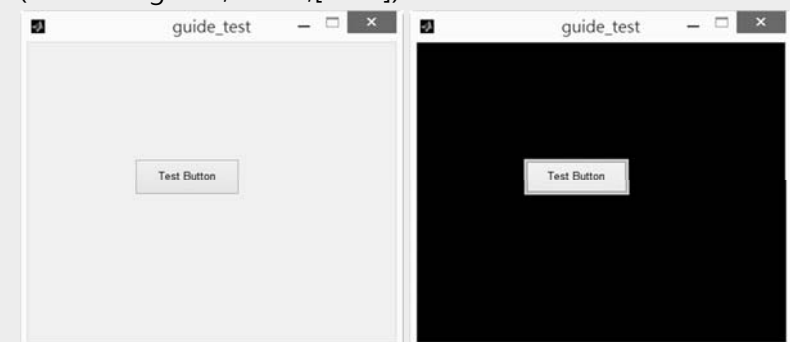
• function Test_Callback(hObject, eventdata, handles)
• handles.Data.testvalue=10000;
  guidata(hObject, handles); % Update handles structure
    
```

- 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

CF

## Example – change figure color

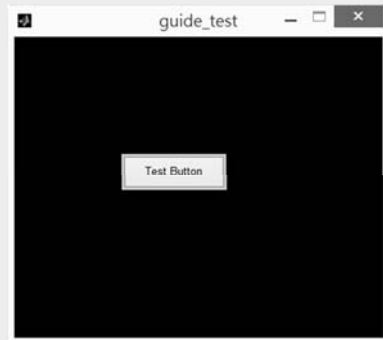
- set(gcf,'color',[0 0 0])
- set(handles.figure1,'color',[0 0 0])



CF

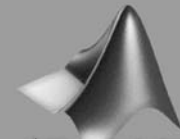
## Example – WindowButtonFcn

```
UserData [1x0 double array]
Visible on
WindowButtonDownFcn guide_test('Test_Callback', hObject,eventdata,guidata(hObject))
WindowButtonMotionFcn
```



Similar setup for other ButtonFcns

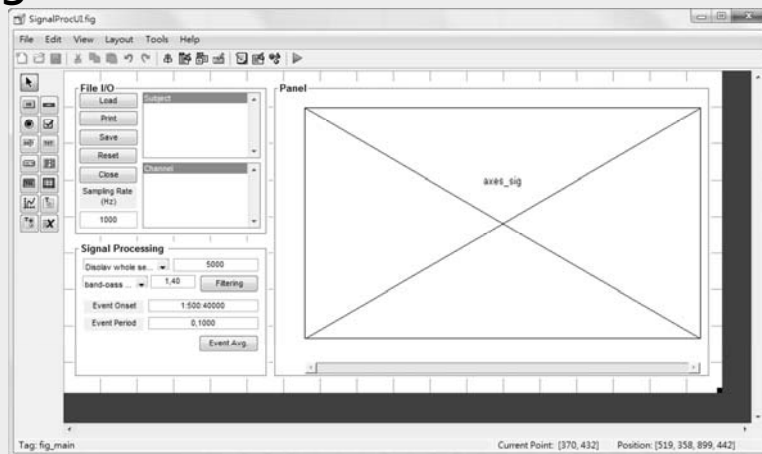
**CF**



## 訊號濾波器GUI實作

**CF**

## SignalProcUI



**CF**

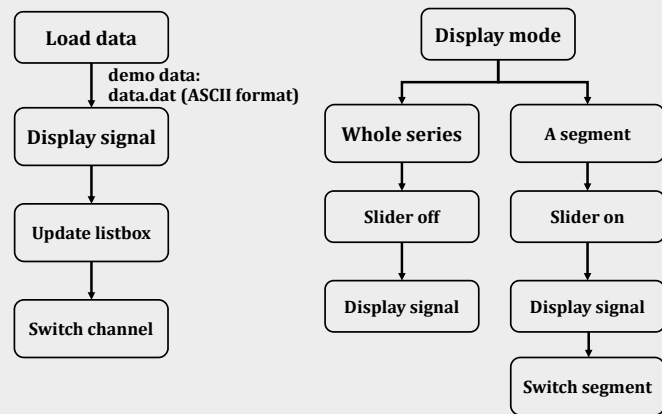
## Modify Properties

- String/Title: appeared strings
- Tag: handle names
- Resize: 'on'
- Units: 'normalized'



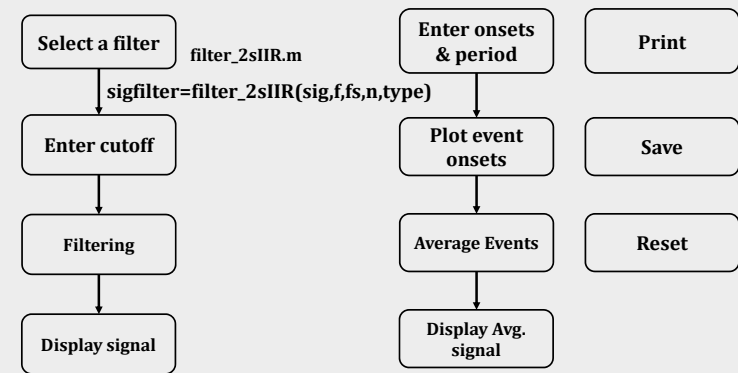
**CF**

## Processing Diagram – Load & Display



CF

## Processing Diagram – Filtering and Averaging



CF

THE END

alvin4016@ym.edu.tw

CF