請先下載本週上課資料

- [http://www.ym.edu.tw/~cflu](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11週 [上課資料] materials_L11.zip，檔案大小約4.8MB

本週內容

- MATLAB guide架構
- 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

GUI design
Core Concept of GUI

FUNCTION

1. Initialize GUI
2. Interact with GUI (Callback)

Learn how to deal with
• handle
• Data

1. Initialize GUI
2. Interact with GUI (Callback)

SELF-ORGANIZE

1. Command lines
2. Define in ‘start’ section
3. Transfer data using global variables
4. if-elseif-end structure

USING GUIDE

1. Design environment & Command lines
2. Define in ‘OpeningFcn’ section
3. Transfer data using GUIDATA variables
4. Sub-function structure

GUIDE GUI CREATION

Decide Layout
Adjust Object Properties
Construct Callback
Construct OpeningFcn
guide Structure – initialize GUI

```matlab
function guide_test_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject handle to figure
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)
% varargin command line arguments to guide_test (see VARARGIN)
% Choose default command line output for guide_test
handles.output = hObject;
% Update handles structure
guidata(hObject, handles);
% URIWAIT makes guide_test wait for user response (see UINESS)
% uiwait(handles.figure);
end
```

Create other objects here!!

guide Structure – Callback

```matlab
function Test_Callback(hObject, eventdata, handles)
% hObject handle to guide_test (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)
% Add commands here!!
guidata(hObject, handles); % Update handles structure
```

Add commands here!!

SignalProcUI

訊號濾波器GUI實作
Processing Diagram – Load & Display

- Load data
- Display signal
- Update listbox
- Switch channel

Display mode
- Whole series
- A segment
  - Slider off
  - Slider on
- Set xlim in axis
- Display signal
- Switch segment

Load data: demo data (ASCII format)

Display signal:
- data.dat

Programming Design – Display Signals

Programming Design – Callback in One

Select a filter
sigfilter = filter_2sIIR(sig, f, n, type)

Processing Diagram – Filtering and Averaging

Enter onsets & period
Plot event onsets
Average Events
Display Avg. signal

Enter cutoff
Filtering
Display signal

Reset
Close
Print
Save
Signal filtering

- Select a specific frequency band
- Remove high-frequency noise from machine and environment
- Eliminate low-frequency signal drift

Event Average

- Original signal
- Averaged signal

Lesson 7, Digital Filter design
http://www.ym.edu.tw/~cflu/CFLu_course_matlabsig.html

THE END
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