

MATLAB 使用者介面控制元件 使用技巧

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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9週 [上課資料] [materials_L9.zip](#) · 檔案大小約132KB
與 [課程講義] [Lesson9_slides.pdf](#)

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本週內容

- 控制元件基本屬性
 - Uicontrol
 - figure, axes, line
- 控制元件搭配使用範例
 - CoordUI.m 介紹

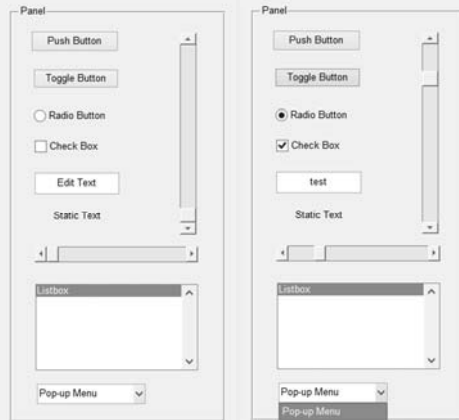


控制元件基本屬性

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uicontrol Style

- Pushbutton
- Text
- Edit
- Popupmenu
- Listbox
- Radiobutton
- Checkbox
- Slider



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Learn uipanel First!

```
handle.fig_main=figure;
```

```
handle.panel1 = uipanel('Parent',handle.fig_main,...  
'Units','normalized','Position',[0.05 0.50 0.90 0.45],...  
'backgroundColor',[1 1 1],...  
'Title','Signal',...  
'FontSize',10,'Fontweight','bold');
```



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Pushbutton

```
handle.load = uicontrol('parent',handle.panel1,...  
'Units','normalized','Position',[0.03 0.80 0.25 0.15],...  
'Style','Pushbutton',...  
'String','Load',...  
'Callback','CoordUI('load')');
```

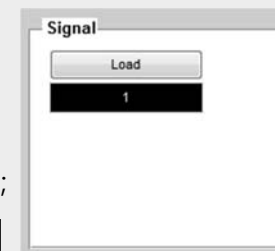


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Edit vs. Text

```
handle.filenum = uicontrol('parent',handle.panel1,...  
'Units','normalized','Position',[0.03 0.64 0.25 0.15],...  
'Style','Edit',...  
'BackgroundColor',[0 0 0],...  
'ForegroundColor',[1 1 1],...  
'String','1',...  
'Callback','CoordUI('period_edit')');
```

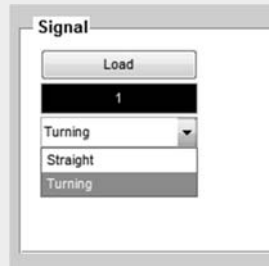
Edit ↔ Text



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Popupmenu

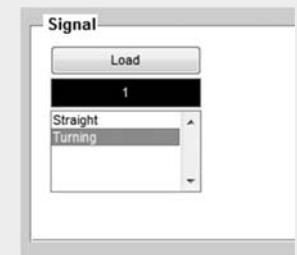
```
handle.task=icontrol('Parent',handle.panel1,...  
    'Units','normalized','Position',[0.03 0.48 0.25 0.15],...  
    'Style','Popupmenu',...  
    'BackgroundColor',[1 1 1],...  
    'String',{'Straight','Turning'},...  
    'enable','on',...  
    'value',2,...  
    'Callback','CoordUI("tasktype")');
```



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Listbox

```
handle.task=icontrol('Parent',handle.panel1,...  
    'Units','normalized','Position',[0.03 0.23 0.25 0.40],...  
    'Style','Listbox',...  
    'BackgroundColor',[1 1 1],...  
    'String',{'Straight','Turning'},...  
    'max',2,...  
    'value',2,...  
    'Callback','CoordUI("tasktype")');
```

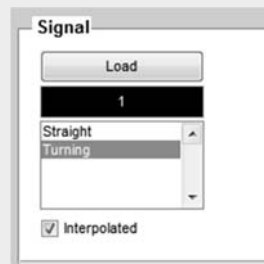


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Checkbox vs. Radiobutton

```
handle.interp = uicontrol('parent',handle.panel1,...  
    'Units','normalized','Position',[0.03 0.07 0.25 0.15],...  
    'Style','checkbox',...  
    'BackgroundColor',[1 1 1],...  
    'String','Interpolated',...  
    'value',1,...  
    'Callback','CoordUI("interp")');
```

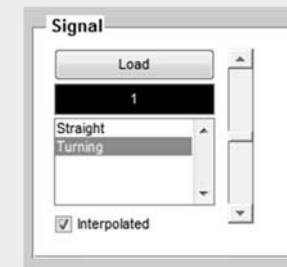
Checkbox ⇔ Radiobutton



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Slider

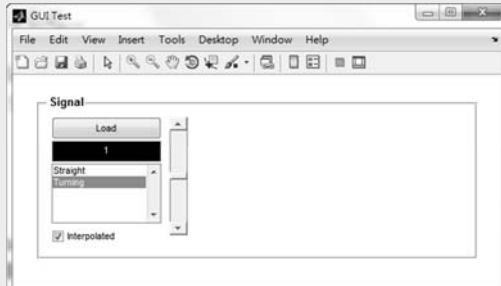
```
handle.slider = uicontrol('parent',handle.panel1,...  
    'Units','normalized','Position',[0.30 0.15 0.04 0.80],...  
    'Style','slider',...  
    'min',0,'max',1,...  
    'value',0.5,...  
    'sliderstep',[0.01 0.10],...  
    'Callback','CoordUI("slider")');
```



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figure

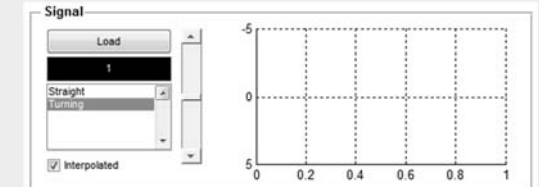
```
handle.fig_main=figure('name','GUI Test',...  
    'units','normalize','position',[0.3 0.3 0.3 0.4],...  
    'Menubar','figure',...  
    'Toolbar','none',...  
    'NumberTitle','off',...  
    'color',[1 1 1]);
```



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axes

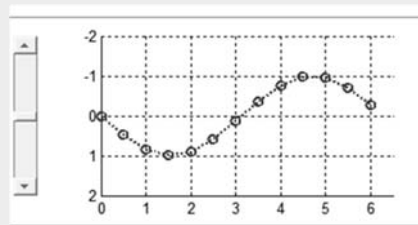
```
handle.axes1=axes('parent',handle.panel1,...  
    'Units','normalized','position',[0.45 0.15 0.50 0.80],...  
    'XGrid','on','YGrid','on',...  
    'XDir','normal','YDir','reverse',...  
    'Xlim',[0 6.5],'Ylim',[-2 2]);
```



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line

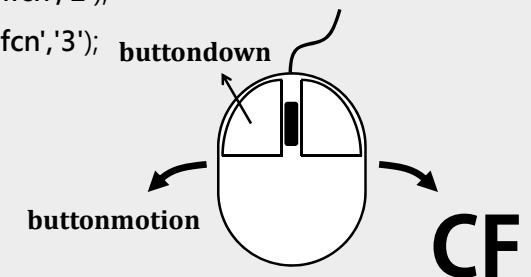
```
handle.line1=line('parent',handle.axes1,...  
    'xdata',[0:0.5:2*pi],...  
    'ydata',sin([0:0.5:2*pi]),...  
    'linewidth',2,'color',[1 0 0],...  
    'linestyle',':','marker','o');
```



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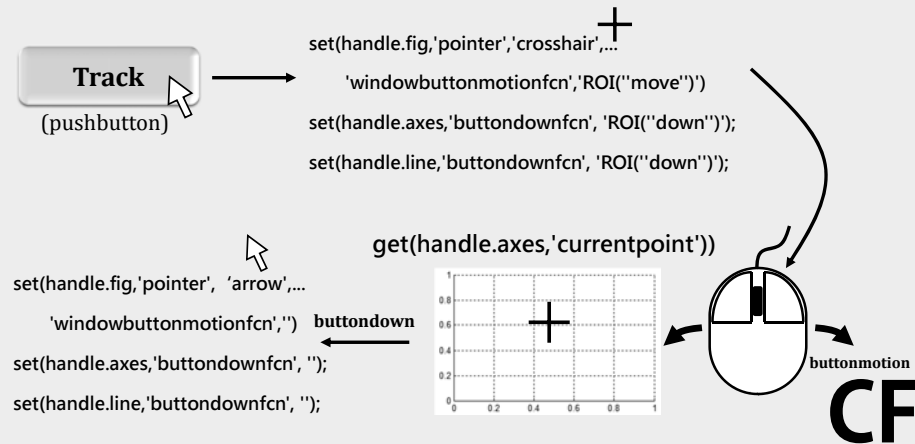
Mouse Functions

```
set(handle.fig_main,'pointer','crosshair',...  
    'windowbuttonmotionfcn','1')  
set(handle.axes1,'buttondownfcn','2');  
set(handle.line1,'buttondownfcn','3');
```



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Flow Chart of Mouse Functions



List of Mouse/Key Functions

figure

- WindowButtonDownFcn
- WindowButtonMotionFcn
- WindowButtonUpFcn
- WindowKeyPressFcn
- WindowKeyReleaseFcn
- WindowScrollWheelFcn

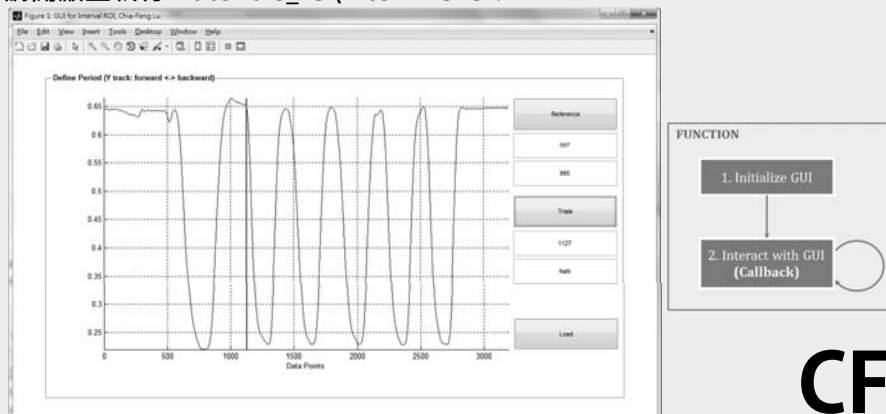
axes/line/image/patch

- ButtonDownFcn

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GUI – Period Selection

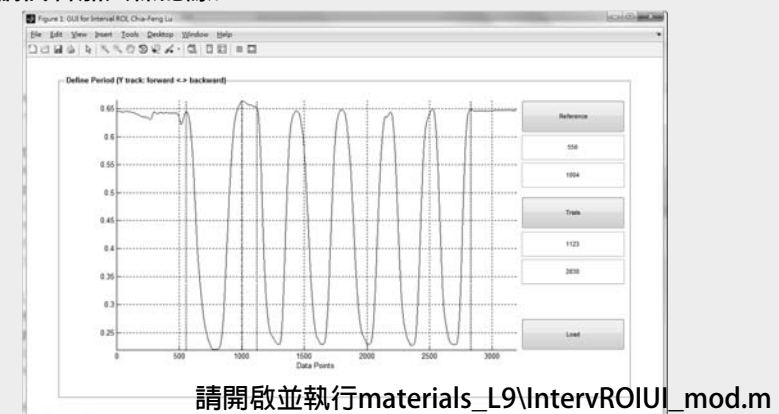
- 請開啟並執行materials_L9\IntervROIUI.m



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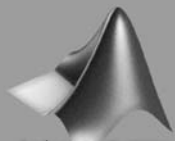
GUI – Period Selection

- 請試著加入標記線!



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請開啟並執行materials_L9\IntervROIUI_mod.m



控制元件使用範例

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Modules of uicontrol

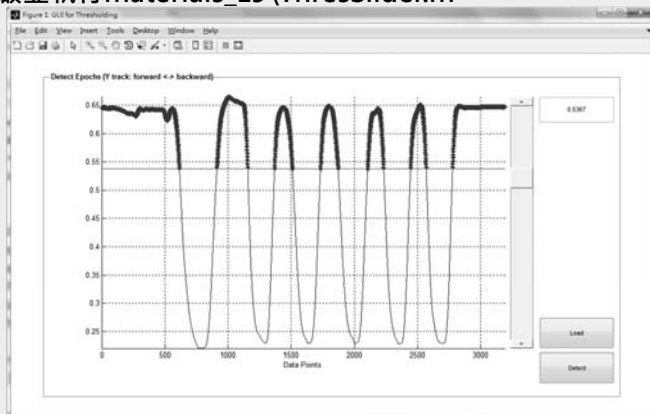
- File Control
 - Load/Save/List/Print
- Function Manager
 - Processing flow/parameters
- Signal/Image Display
 - Visual inspection

Use uipanel to modulize the functions !!

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GUI – Thresholding Slider&Edit

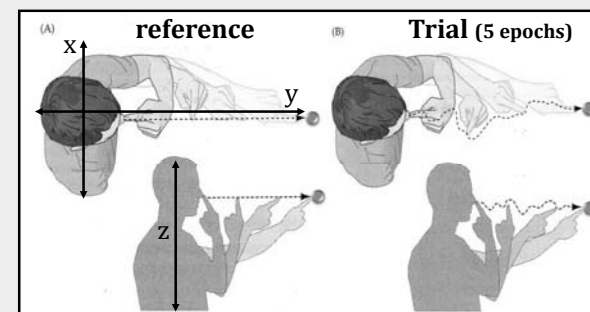
- 請開啟並執行materials_L9\ThresSlider.m



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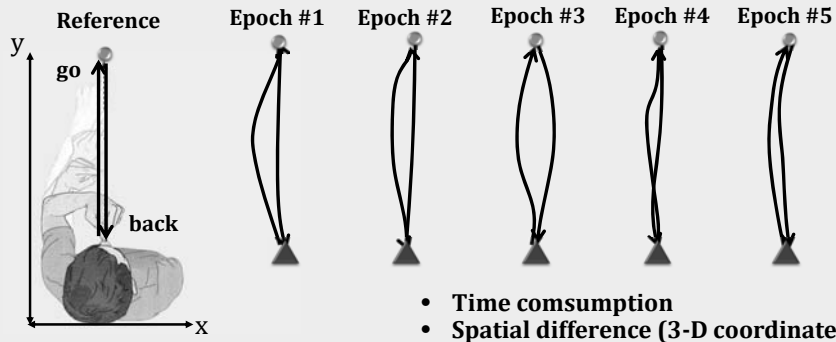
Finger-to-Nose Test

- The Finger-to-Nose-Test measures smooth, coordinated upper-extremity movement by having the examinee touch the tip of his or her nose with his or her index finger.



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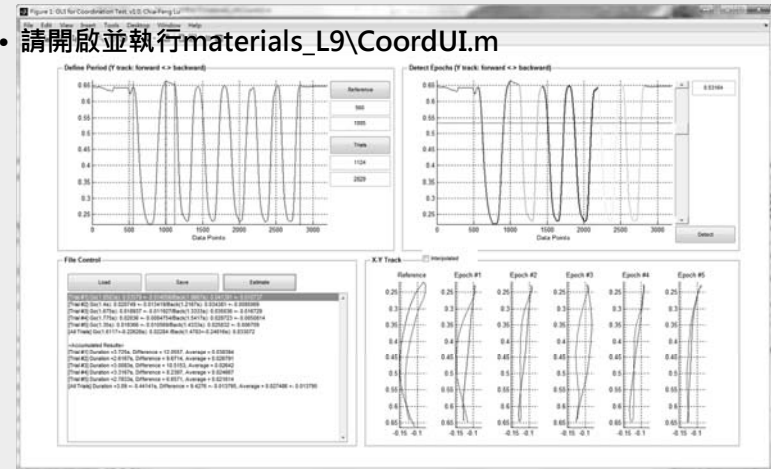
Trial-to-reference differences



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GUI – Coordination Test

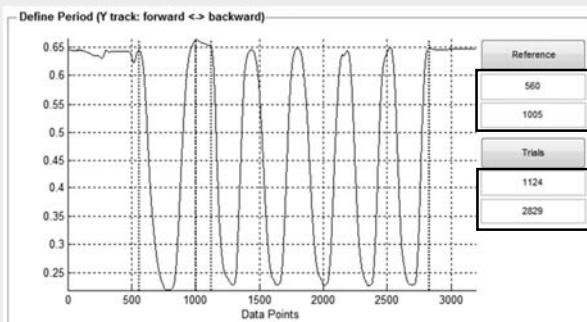
- 請開啟並執行materials_L9\CoordUI.m



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Challenges on CoordUI.m

- Use callback of edit to select the period.
- Control processing flow by setting uicontrol enable on/off.



請開啟並執行materials_L9\CoordUI_mod.m

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THE END

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