

MATLAB uimenu 近紅外光血氧訊號 GUI修改

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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14週 [上課資料] [materials_L14.zip](#) · 檔案大小約20MB

本週內容

- uimenu設計
- 近紅外光血氧訊號GUI修改

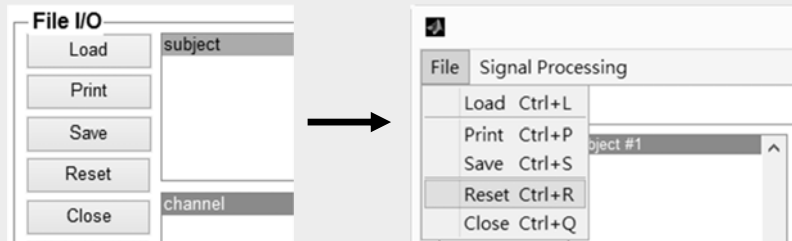
HOMER2
David Boas,
MGH-Martinos Center for Biomedical Imaging
<http://www.nmr.mgh.harvard.edu/PMI/resources/homer2/home.htm>



uimenu設計

uimenu

- Organize functions into a Menubar.
 - Give more space for displaying signals/images.
 - Categorize functions into a structured manner.
 - Set up an accelerator for a specific function.
 - Provide extra or advanced functions.

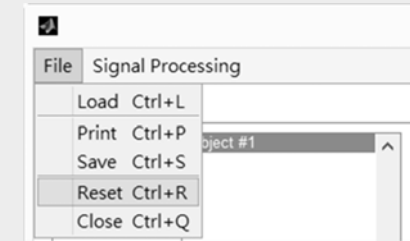


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Properties of uimenu

- set uimenu in the command window!

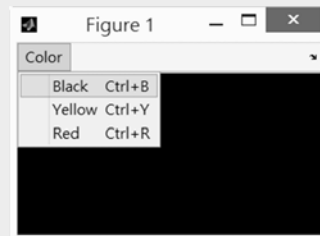
- Parent
- Label
- Callback
- Accelerator
- Enable : [{on} | off]
- ForegroundColor
- Separator : [on | {off}]



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Declare an uimenu with items

```
handle.fig=figure('menubar','none');
handle.color=uimenu('parent',handle.fig,'Label','Color');
handle.black=uimenu('parent',handle.color,...
    'Label','Black','callback','testUI(''black'')',...
    'Accelerator','b');
```

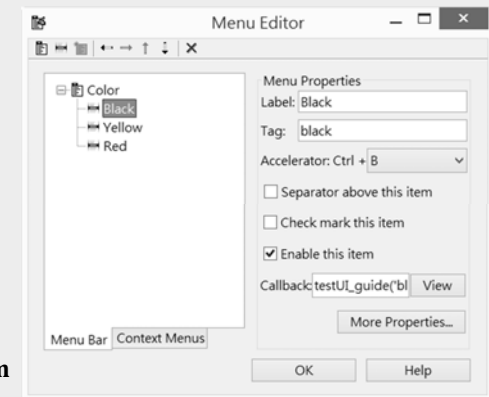


materials_L14\testUI.m

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guide - Menu Editor

- Create the same figure and munubar by using guide.
 - testUI_guide.fig
- Tools → Menu editor

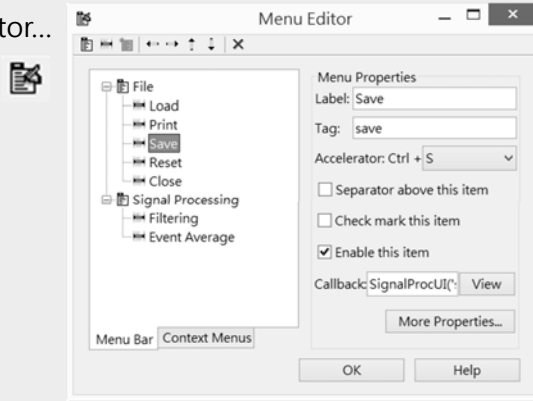


materials_L14\testUI_guide.m

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guide - Menu Editor

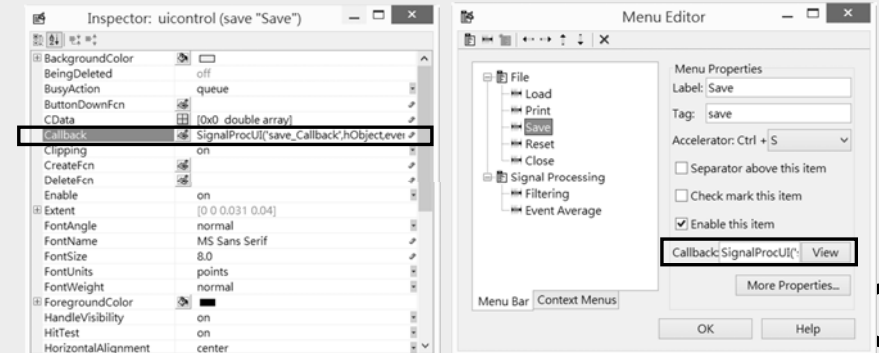
- guide → materials_L14\SignalProcUI\SignalProcUI.fig
- Tools → Menu editor...



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Callback of uimenu

- Synchronize the callbacks of uicontrol & uimenu!
- `SignalProcUI('save_Callback',hObject,eventdata,guidata(hObject))`



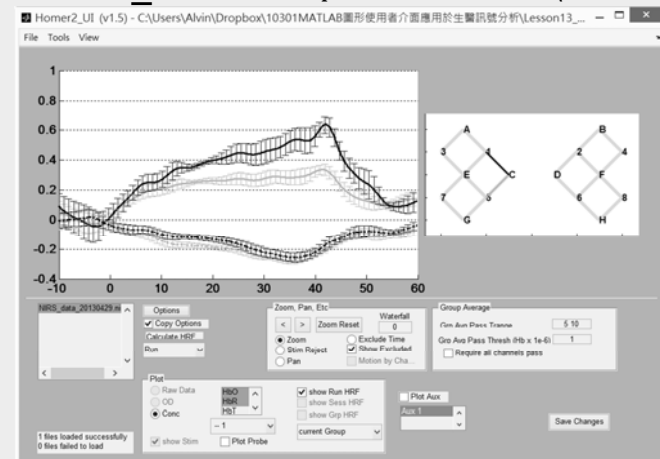
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近紅外光GUI修改

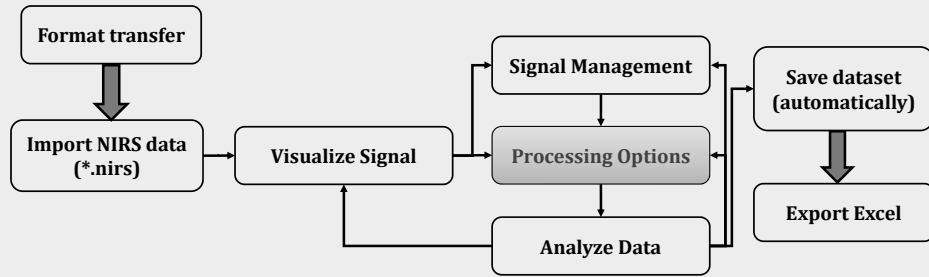
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Homer2_UI.m add path: materials_L14\Homer2



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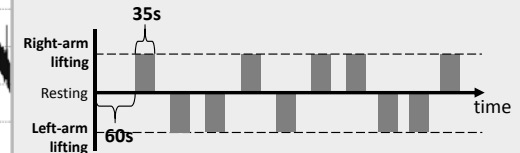
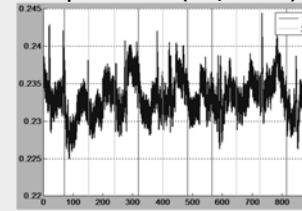
Framework of Homer2_UI



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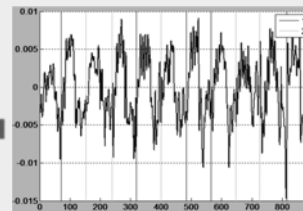
Signal Processing

Step 1: raw data (760/850 nm)

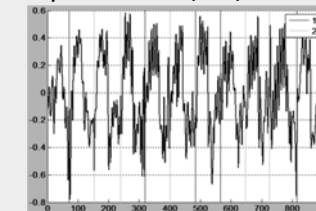


$$D = \log_{10} \frac{I_0}{I_1}$$

Step 2: filtering and optical density



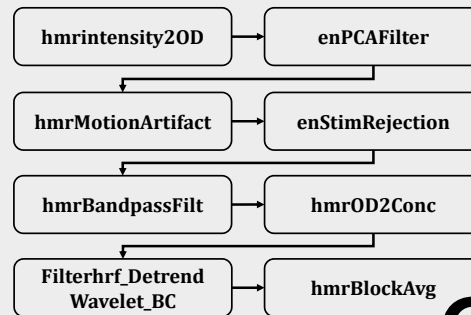
Step 3: relative HbO/HbR/Hbtotal concentration



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Signal Processing

- Intensity to OD
- PCA Filter
- Remove motion artifacts
- Stimulus rejection
- Bandpass filtering
- OD to Hb concentrations
- Wavelet-MDL detrending
- Block Average



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Homer2_UI

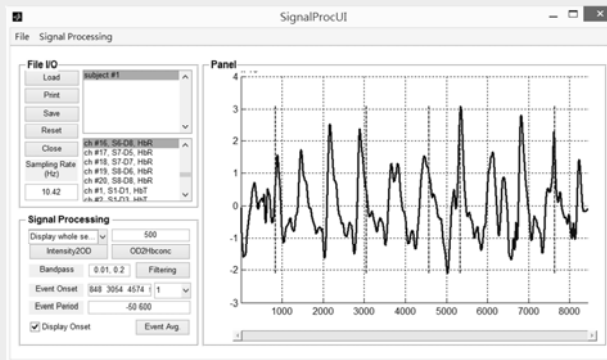
- Tools → Process Stream GUI
- Load → Current Processing Stream

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Incorporate Functions in our GUI

- hmrIntensity2OD.m
- hmrBandpassFilt.m
 - MakeFilter.m
- hmrOD2Conc.m

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THE END

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