Notes on Usage

About the GUIs / Motivation

The GUIs are arraigned in approximate order of complexity, but do not follow a definite progression. The first few are VERY basic, and are intended to demonstrate the first few questions a new GUI writer might have. As such, the more advanced reader may think them repetitive. To a certain extent, the point is granted. There are many overlapping concepts in different GUIs and this is intentional, if not unavoidable. However, I believe that anyone working their way through each and every example until it is fully grasped should have little trouble tackling a more involved project later. Even if a particular question is not described here, the skills acquired through such an endeavor should be enough to give an idea of how to approach a particular need, or the right questions to ask in searching for the solution.

Some of the GUIs have suggested exercises in the help section. Thus, as intimated above, the GUI files may serve to not only answer specific questions, but as a tool to learn more about making GUIs in MATLAB. I would be interested in seeing how people implemented these suggested exercises, and suggestions for more exercises.

Many of the examples and questions within are inspired directly by questions asked, sometimes repeatedly, on the MATLAB newsgroup. I will be on the lookout for more questions and examples to add to the list in the future. If you feel there is some common (even not-so-common!) question which is missing here, please let me know through email. I would be happy to add it to the list and/or make another GUI!

Data Sharing/Storage in GUIs

There are many approaches to the problem of storing and passing data between elements of a GUI and other workspaces. Among the approaches I have used in the past are: global variables, storage in userdata properties, storage/retrieval with get/setappdata and guidata. In the GUI examples that follow, none of these approaches are used. Instead the method used will be the one I currently use in my professional capacity. This is the method I have come to prefer for reasons not elaborated here. As the GUI examples are arraigned roughly in order of complexity, anyone with modest MATLAB skills should be able to distinguish this technique quite easily; thus I will not discuss the method in detail here. The matter is addressed only as a way to introduce the notion that whatever method one prefers, the examples furnished here are easily adaptable to individual styles. I would be happy to discuss any questions in this regard through email.

Syntax Considerations

All of the handles to the various objects created in each GUI, as well as data needed to run the GUI, are stored in a main structure called S. The fieldnames for handles are in lower case letters, and the fieldnames for data are in uppercase letters. Callback function names are designated with the fieldname of the object to which they correspond, followed by '_call.' Other function names are similarly designated. For instance, a keypressfcn will end in '_kpfcn' and a buttondownfcn will end in '_bdfcn.' The code of each GUI is generously commented, and subtle points may be examined in the comments (see for example the last comment block in GUI_37). If anything seems unclear, look first in the comments, and if satisfaction is not found there feel free to email me.

A Final Note

I am especially interested in feedback from those who use these files to learn how to make GUIs without GUIDE. If that has been your purpose, and you have read the files and done some of the exercises, please provide feedback on your experience. I especially want to know if anything could be clearer, or if there are pieces of the GUI puzzle which could be better presented. Do not hesitate to contact me with questions about the exercises or any other aspect of the code. Also included is a helper function called previewGUIs which allows the user to quickly run through all examples in this collection except for those which use uiwait. See the help for previewGUIs to learn more.

Contact: popkenai@yahoo.com Any and all suggestions/comments are appreciated.

Questions

1. How do I manipulate the strings in a uicontrol? GUI_1, 2, 4, 5, 13, 14, 15, 20, 21, 22, 37
2. How do make a uicontrol invisible/visible? GUI_3, 35 (See also GUI_10 for images)
3. How do I make a multi-line edit box? GUI_4
4. How can I initialize an editbox so that the cursor is blinking at startup? GUI_4, 24, 37
5. How can I let the user of my GUI know his actions are futile (or producing no results)? GUI_5
6. How can I tell which uicontrol is selected e.g., radiobuttons? GUI_6, 8
7. How do I tell how many times a uicontrol has been activated? GUI_7, 19, 28, 32, 33
8. How do I tell which button in a buttongroup is selected? GUI_8
9. How do I let the user know a process is running in the background? GUI_9
10. How can I set an image visible/invisible? GUI_10
11. How can I use a GUI to exit a FOR loop? GUI_11
12. How can I control the mouse pointer with a GUI? GUI_12
13. How do I access the value (current position) of a slider? GUI_13, 16
14. How do I use different colored strings in a listbox? GUI_14
15. What is the difference between 'listboxtop' and 'value' in a listbox? GUI_14
16. How do I make text that can be copied but not changed? GUI_15
17. How can I allow the user of my GUI to set the range of a slider? GUI_16
18. How can I display a digital clock in my GUI? GUI_17
19. How can I use a timer in a GUI? GUI_17
20. How do I use the buttondownfcn on an axes object? GUI_18, 28
21. How do I make a callback talk to another callback? GUI_19
22. How can I get the string from a popup or listbox? GUI_14, 20, 21, 22, 31, 32, 33
23. How can I set the string in a popup or listbox? GUI_21, 22
24. How can I add to the string in a popup or listbox? GUI_22
25. How do I tell which figure/axes was current before my callback executed? GUI_23
26. How do I get data from another GUI? GUI_24
27. How do I make a GUI to open image files only? GUI_25
28. How can I make popup choices mutually exclusive? GUI_26
29. How can I show the current pointer location in axes coordinates? GUI_27
30. How can I use uicontextmenus? GUI_28, 33, 39
31. How do I make my GUI control an axes in another figure? GUI_29, 30
32. What are callback strings? GUI_30
33. How can I make it so that when one of the figures closes, they all close? GUI_24, 29, 30, 41
34. How do I make several uicontrols interact in a more complicated GUI? GUI_31, 32, 33, 41
35. How do I get data from a GUI to the base workspace? GUI_25, 32, 33, 36
36. How can I use a GUI to take a screenshot of my desktop? GUI_34
37. How do I make toggle buttons act like tabbed-panels? GUI_35
38. How do I make a custom dialog box which returns a string to the base workspace? GUI_36
39. How can I make a password editbox that has the ***** symbols? GUI_37
40. How can I use nested function as callbacks? GUI_11, 17, 34, 36, 37, 39, 40, 41.
41. How can I use uiwait in a GUI? GUI_11, 34, 36, 37
42. How do I use JAVA in my GUI? GUI_38
43. How do I force the figure to maintain focus between uicontrol activations? GUI_38