CRC - ExploreStruct v1.1,

MatLab Utility for exploring structures and plotting their fields

Syntax: explorestruct(S), where S is structure, array of strctures or nested structures

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0. Introduction

This GUI is an updated and enhanced version of the "**StructBrowser**" utility submitted to MatLab Central in May 2003. It comes with new interface and an enhanced display. It uses Microsoft TreeView control to display and explore any kind of MatLab structures. The **CRC ExploreStruct** was designed to expose the contents of the array struct to any depth and plot any of the components. This tool is very useful for programmers using structures in their code.

The **ExploreStruct** utility was implemented and tested using MatLab 7sp2.

1. Launching the GUI

- Unzip the zip file ("explorestruct.zip") into a folder of your preference. For example "C:\temp"
- Add to path the "C:\temp"
- Inside the MatLab command type: cd C:\temp
- Then type the command: movefile('exp_struct_icons', [matlabroot,'\work']). The folder "exp_strcut_icons" will be moved to the work folder of MatLab directory.
- Note that the previous two steps can be ignored. If so, you have to specify inside the M file "explorestruct.m" (see line 181) where the folder "exp_struct_icons" is located. This is necessary for the GUI to load the icons.
- After this, you are done! To make sure everything is working properly you can type the demo file ("es_demo.m"). Explore all the features of the GUI and, if everything is fine, you can now enjoy using this utility by typing: explorestruct(S), where S is the structure to be explored.

2. Exploring a structure

To explore a structure 'S', type explorestruct(S) in the MatLab command. Then, the GUI will load showing on the left side a TreeView window having as root the structure S (see Figure 1).

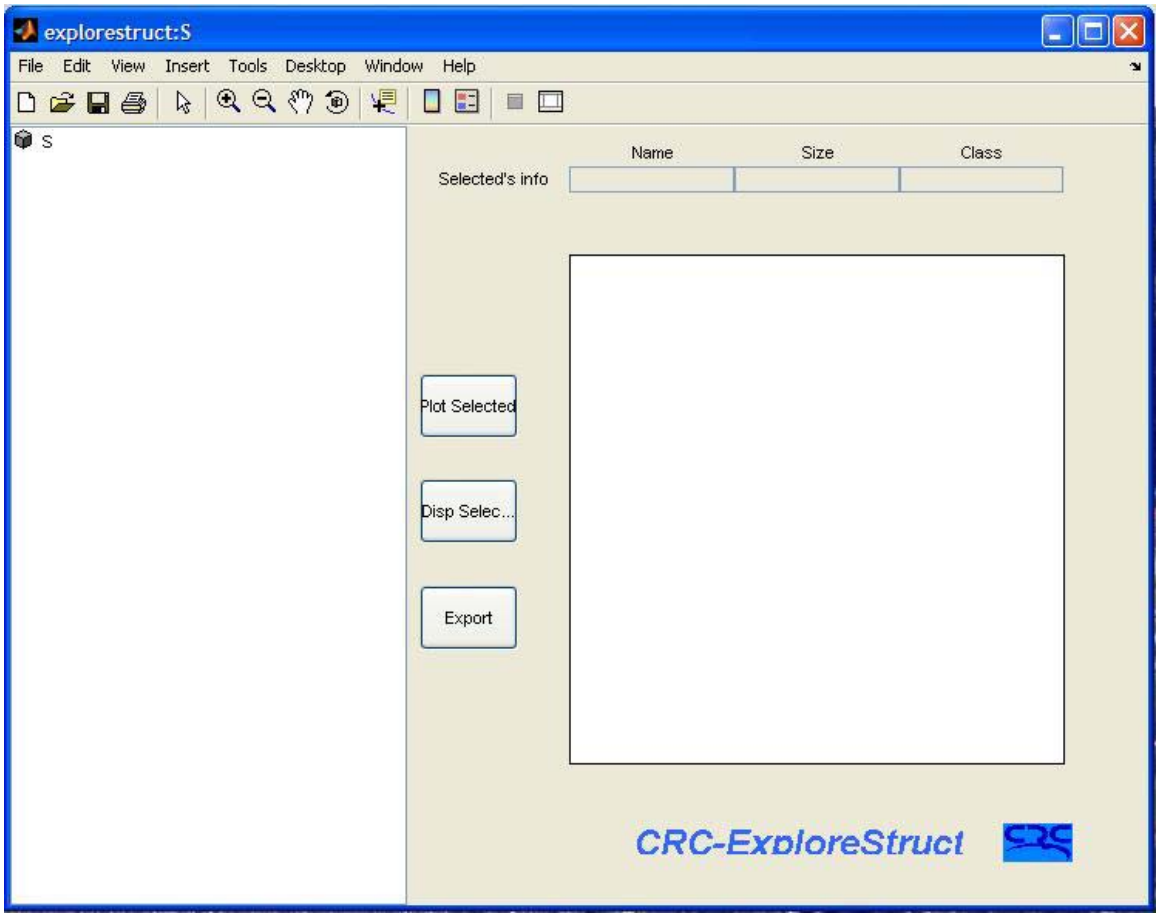

Figure 1

To explore the structure S, just double click the root S and the structure will expand showing all of its fields. If one of the fields is a structure, the TreeView icon "+" will show on the left side of the field's name. Besides, depending on the field's class (double, char, cell, struct, etc…) an additional icon will show on the left side of the fields' names. The following table summarize all the possibilities:

TABLE 1

Field's class	Icon
cell	
char	
double	
logic	
object	
struct	
struct array	
unknown	

If one of the fields is a structure, you can explore it by clicking the "+" icon. The tree is then expanded by showing its corresponding fields. The same procedure is applied to explore the structure to any possible depth.

On the right side of the GUI, one can show information of the tree's selected item. This is displayed on "Selected info" columns (Name, Size and Class). If the selected item is numeric, one can also plot it on the axes located on the right side of the GUI.

After expanding the tree to a given depth, figure 1 will look like (figure 2):

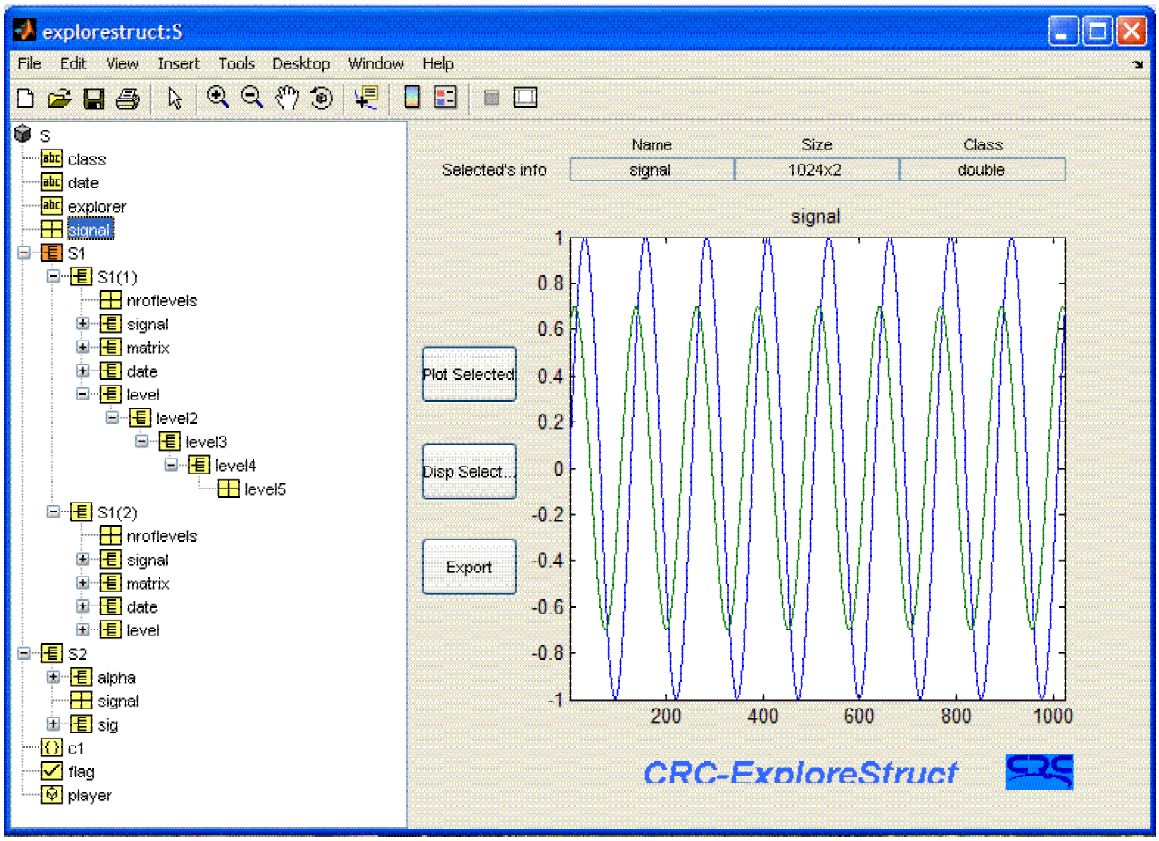

Figure 2

Note that in the case of a struct array, the icon displayed close the structure's name has an orange colour. Then, by clicking the "+" sign, the structure will expand showing its name appended with the corresponding subscripts (1 to N, where N is the length of the struct array).

3. Push buttons

This GUI comes with three push buttons:

- Plot selected
- Disp selected
- Export selected

3.1 Plot selected

When the selected item is numeric, it can be plotted by pressing the 'Plot selected' push button.

3.2 Disp selected

The content (or the value) of the selected item in the tree is displayed in the MatLab command window when the ‘Disp selected’ push button is pressed.

3.3 Export

One may copy a field of interest of the structure explored by pressing the ‘Export’ push button. The selected item is then copied to the variable ‘V’ in the MatLab workspace.

4. Context menu

A context menu is also provided by right-clicking the selected item in the tree. Then, one can plot, display or export to the MatLab workspace the selected item.

5. Demo file

A demo file (es_demo.m) is provided to make the user familiar with the GUI. By typing es_demo in the MatLab command, a structure (S) is loaded in the workspace and the ExploreStruct GUI is launched.

6. Copying agreement