2 Instructions for Line Profile Matlab GUI

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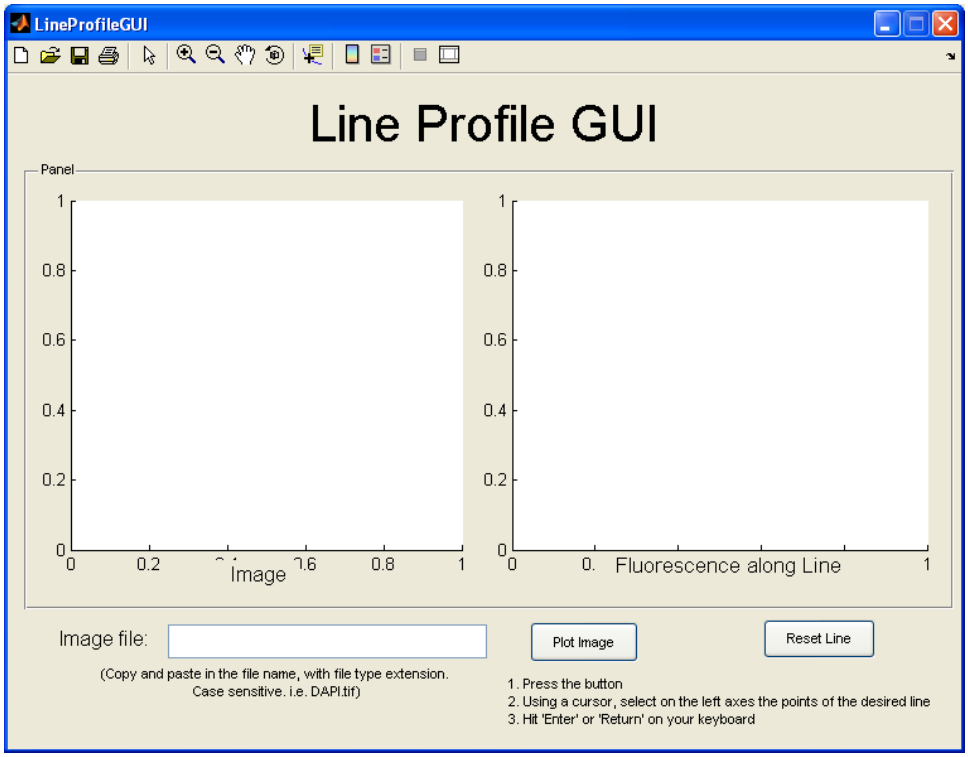
These are the instructions for using Liana Engie's Line Profile Graphical User Interface (GUI) on Matlab.

The program is designed to display the intensity of fluorescence brightness of an image along a line drawn by the user.



Input:

- A greyscale `.tif` image

Output:

- A plot of the fluorescence intensity along the length of the line.

2.1 What the code does

The code opens a greyscale image and allows the user to draw a line along the image. The line can be made from various segments - the user clicks a series of points and a line is drawn between them - with any slope and of any length. Then, a profile of the fluorescence along the line is displayed and can be further examined. The entire sequence can be done repeatedly.

The image is scaled along the blue-red ('jet') colormap, for easy distinguishing of the features of the image.

2.2 Opening Matlab and running the GUI

This code was written in Matlab v.2007a. When opened, you should see the Command Window - probably the largest window - and possibly also the Current Directory, Command History, and maybe the Workspace. To use the GUI you only need to work with the Command Window and Current Directory.

To run the code on a set of data, put the `.tif` files to be analyzed into a folder with `LineProfileGUI.m` and `LineProfileGUI.fig`. You can do this within Matlab in the Current Directory window - just copy and paste the files into a folder together. The Current Directory must be open to the folder with the files that you want to analyze.

To open the GUI, either type

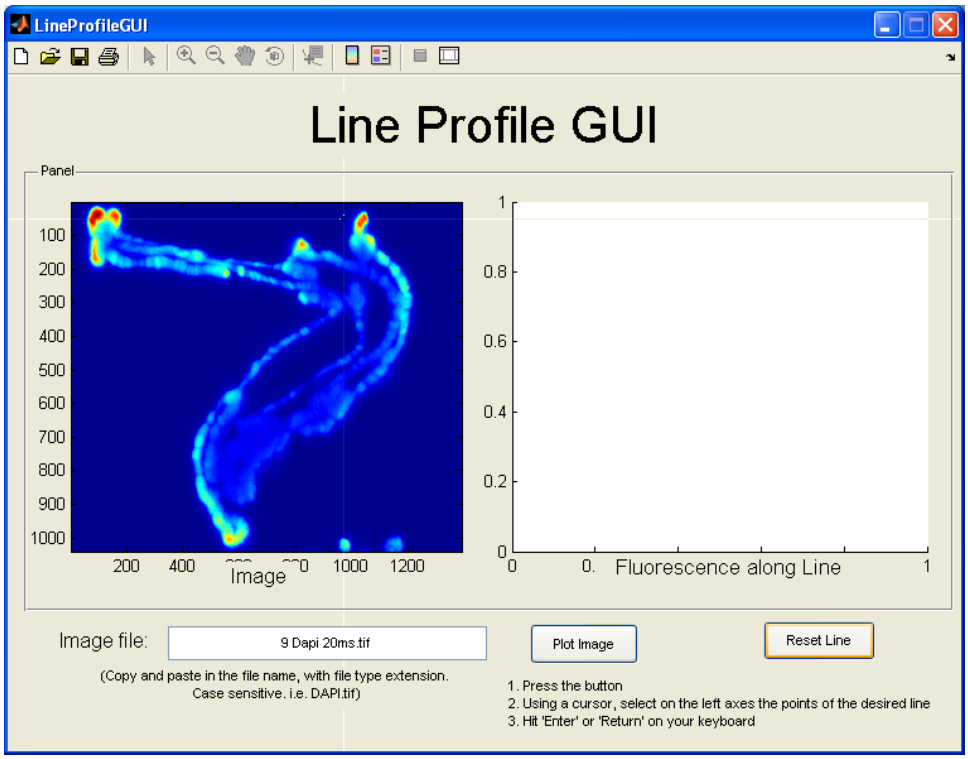
```
>> LineProfileGUI
```

into the command window (case sensitive), or drag `LineProfileGUI.m` from the Current Directory into the Command Window. The blank GUI should open.

2.3 The GUI

2.3.1 Uploading an image

Type in the name of an image, with the file extension. You can also copy and paste the file name directly from the Current Directory (or Windows Explorer window? Must try this) into the blank. Press the buton labeled 'Plot Image'. An image (scaled blue to red) should appear, and the cursor should now appear to be a dot with horizontal and vertical lines tracking it.

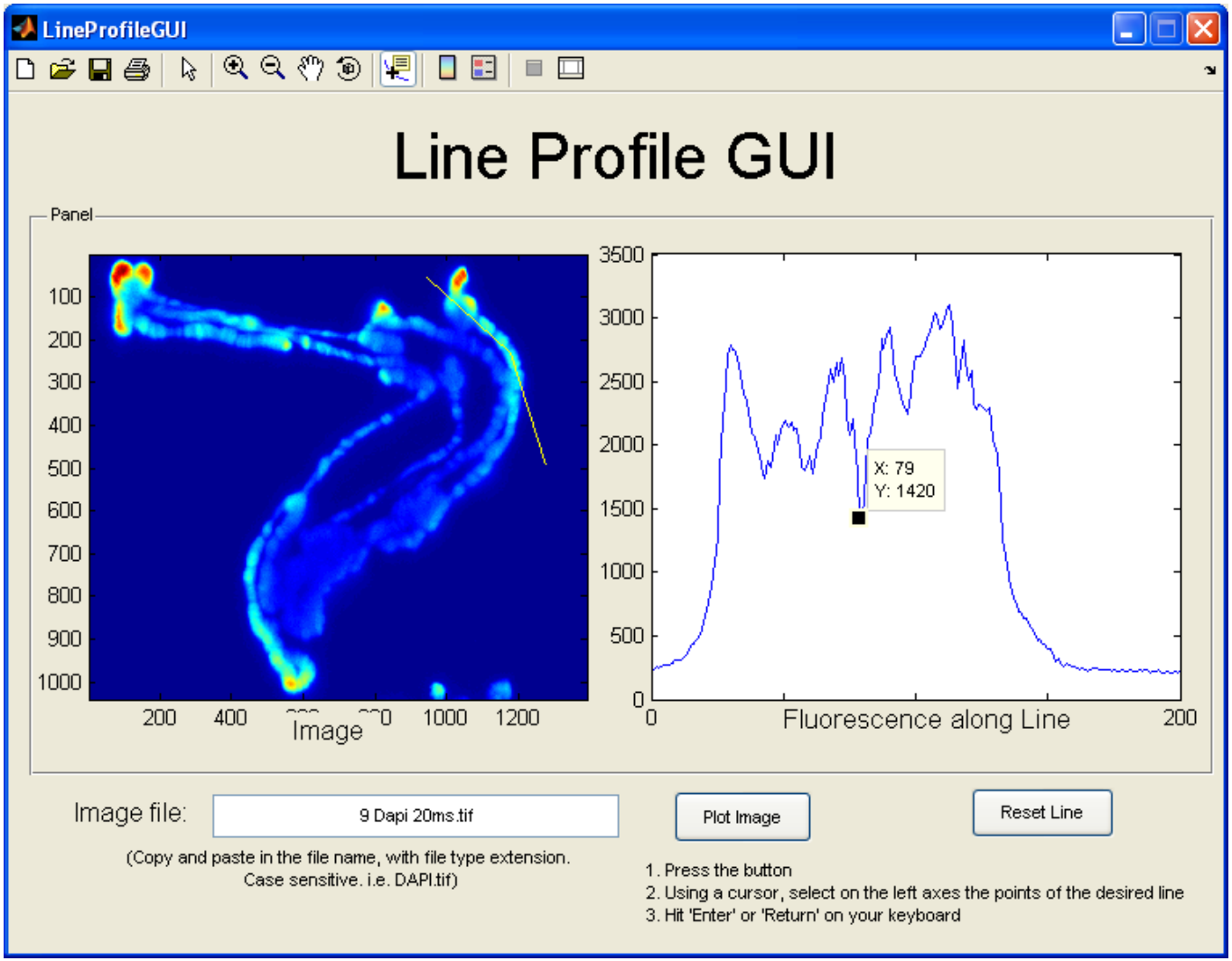


2.3.2 Drawing a line

In the left axes, clicking puts a series of black points down on the image. The points will be connected in order, and the fluorescence along the length of that line will be displayed in the axes to the right when finished. When you have laid out all the points you want, press enter and a yellow line will connect the black dots, and a blue intensity profile will be displayed on the right.

2.3.3 Getting an exact value

To pinpoint the value anywhere along the line, use the toolbar at the top of the GUI. The fifth icon to the right looks like a black + running along a blue line, with a yellow square above it. Click on that, and move the cursor, now looking like a + sign, anywhere along the plot on the right. Clicking a place on the line will give you the distance along the line (x) and fluorescence intensity (y).


LineProfileGUI
Line Profile GUI
Panel
100
200
300
400
500
600
700
800
900
1000
200
400
1000
1200
Image
3500
3000
2500
2000
1500
1000
500
0
X: 79
Y: 1420
0
Fluorescence along Line
200
Image file:
9 Dapi 20ms.tif
Plot Image
Reset Line
(Copy and paste in the file name, with file type extension.
Case sensitive. i.e. DAPI.tif)
1. Press the button
2. Using a cursor, select on the left axes the points of the desired line
3. Hit 'Enter' or 'Return' on your keyboard