README for deconvolution_gui.py

Outline:

1) Install Python 3
2) Download the script files
3) Format and save data set
4) Run deconvolution_gui.py and interpret results

1) Install Python 3

a. Since these scripts make use of several Python 3 libraries (tkinter, csv, random, os, sys, numpy, and math), the simplest way to install Python 3 with these required libraries is through the Anaconda distribution of Python 3 which can be found here (https://www.anaconda.com/download/).
b. Download the appropriate installer (.exe) for your operating system (32-bit or 64-bit - Windows or Mac)
c. Once the installer (.exe) has finished downloading, open it and follow the click-through instructions to install the Anaconda distribution of Python 3. An example of the first step of the installer for a 64-bit Windows system is shown below.

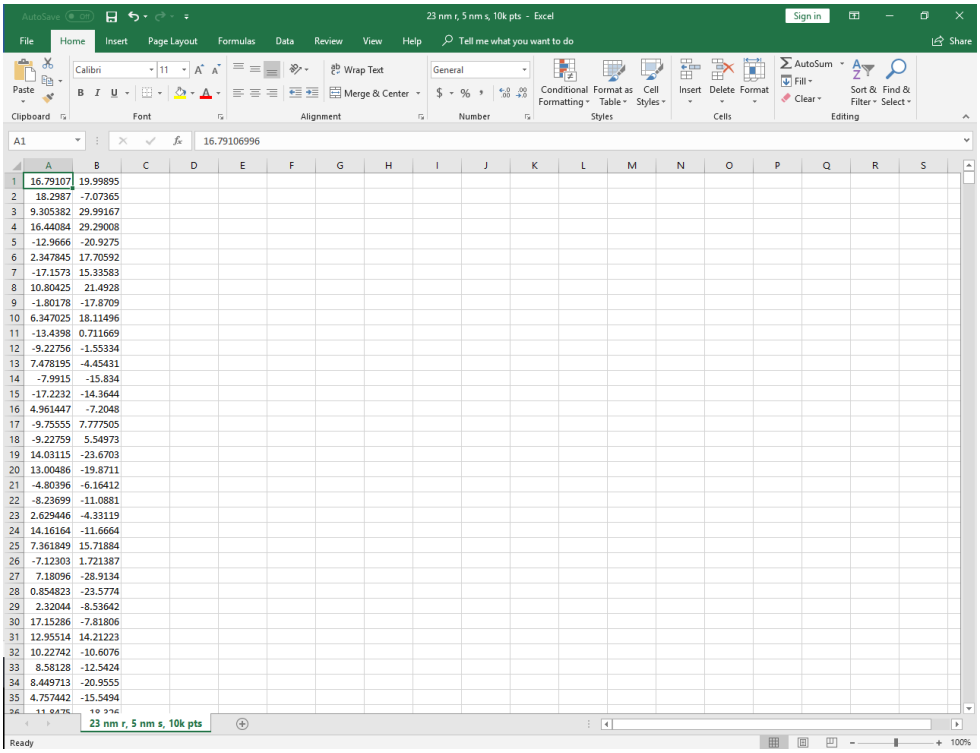
2) Download the script files

a. Download the script files “deconvolution_gui.py” and “easymode.py” and save them into the same folder on your computer.

3) Format and save data set

a. The scripts only accept .csv files formatted with the x values in the first column and y values in the second column. The y axis should be the axis oriented in the same direction as the r axis. An example of the .csv file is shown below.

b.

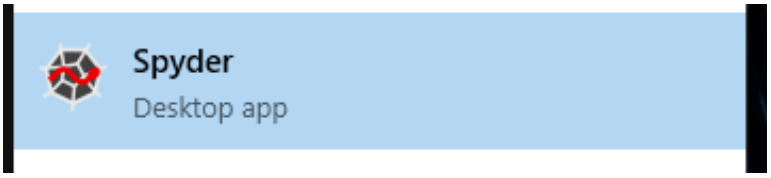


	A	B
1	16.79107	19.99895
2	18.2987	-7.07365
3	9.305382	29.99167
4	16.44084	29.29008
5	-12.9666	-20.9275
6	2.347845	17.70592
7	-17.1573	15.33583
8	10.80425	21.4928
9	-1.80178	-17.8709
10	6.347025	18.11496
11	-13.4398	0.711669
12	-9.22756	-1.55334
13	7.478195	-4.45431
14	-7.9915	-15.834
15	-17.2232	-14.3644
16	4.961447	-7.2048
17	-9.75555	7.777505
18	-9.22759	5.54973
19	14.03115	-23.6703
20	13.00486	-19.8711
21	-4.80396	-6.16412
22	-8.23699	-11.0881
23	2.629446	-4.33119
24	14.16164	-11.6664
25	7.361849	15.71884
26	-7.12303	1.721387
27	7.18096	-28.9134
28	0.854823	-23.5774
29	2.32044	-8.53642
30	17.15286	-7.81806
31	12.95514	14.21223
32	10.22742	-10.6076
33	8.58128	-12.5424
34	8.449713	-20.9555
35	4.757442	-15.5494

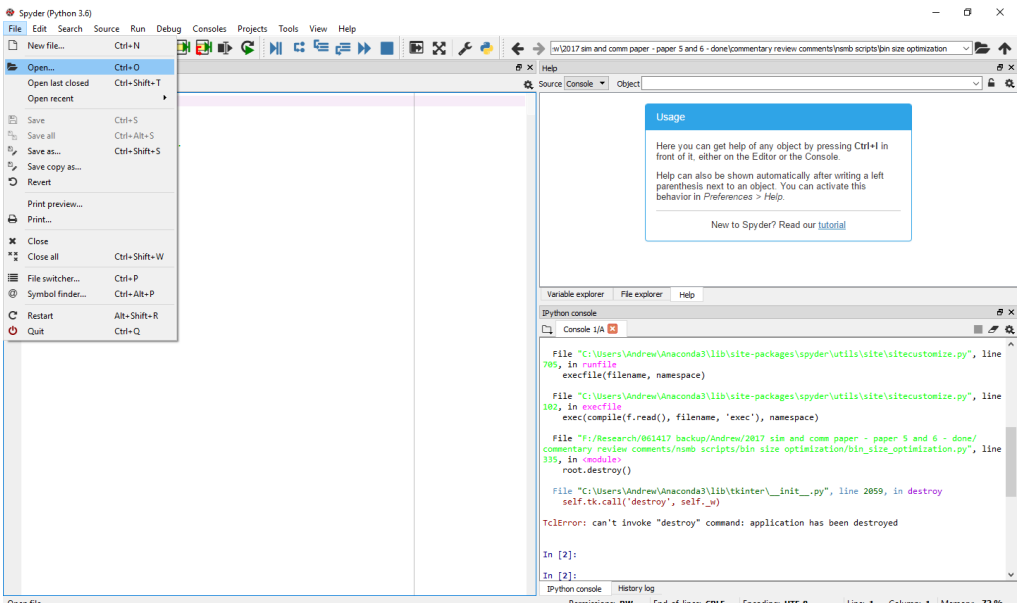
c. Save the .csv file with the xy data to your computer.

4) Run deconvolution_gui.py and interpret results

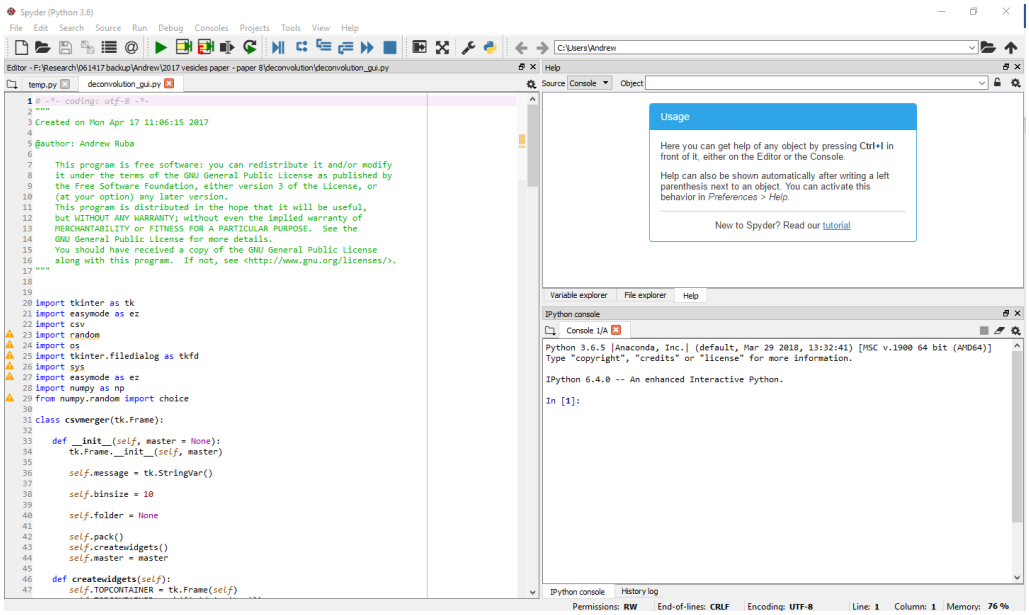
a. Packaged in the Anaconda distribution of Python 3 is an integrated development environment for Python 3 called “Spyder” which was installed on your computer. Open Spyder now – it should have an icon on your desktop or an icon in the program list under the start menu for Windows.



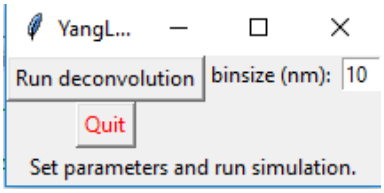
b. Once Spyder starts up, open “deconvolution_gui.py” using the File>Open menu.



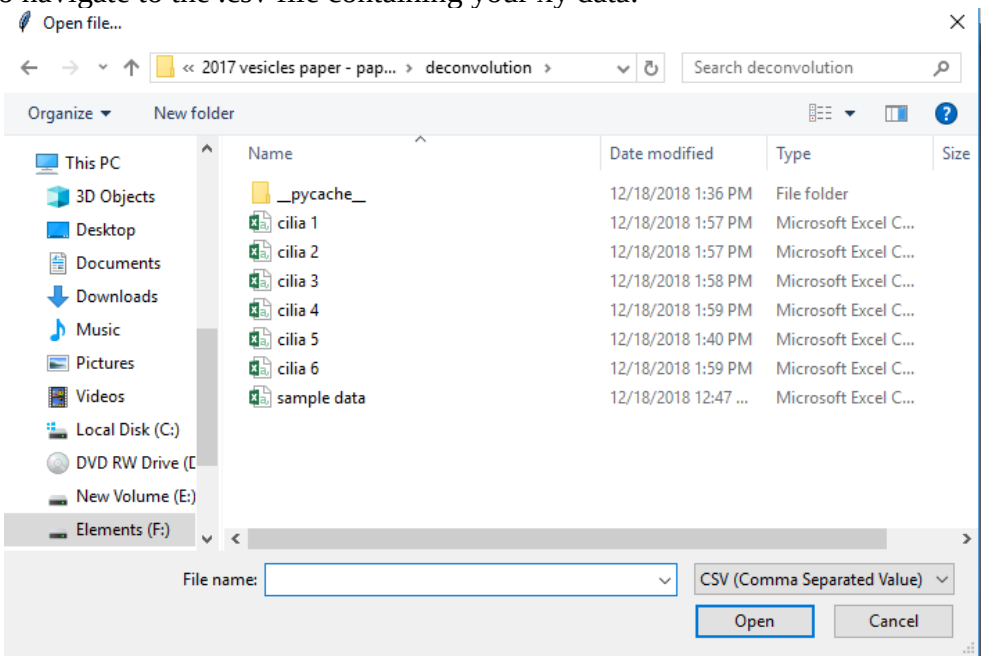
c. Once “bin_size_optimization.py” is open, click the green “Run file” arrow in the toolbar.



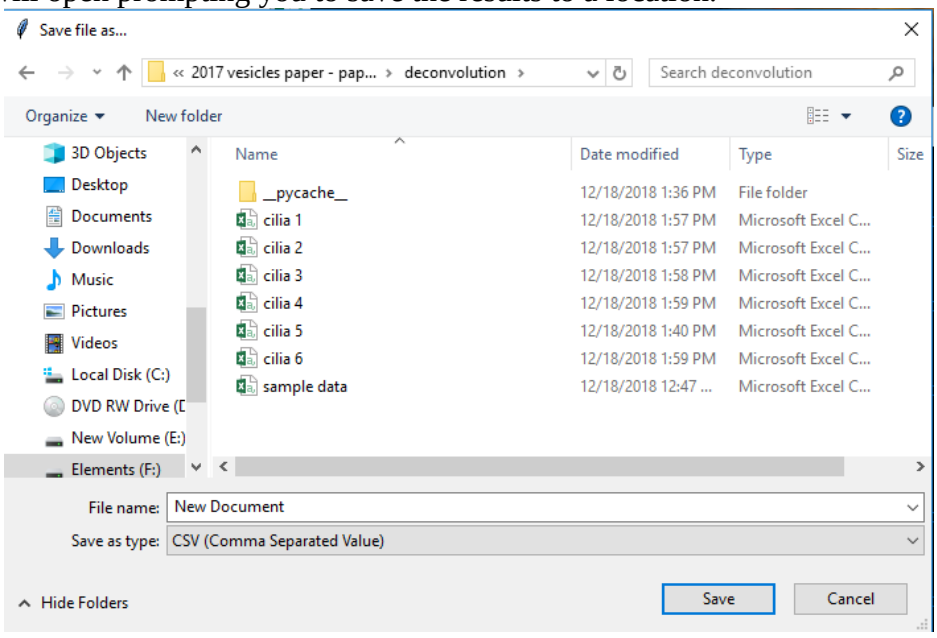
d. After the script runs, a graphical user interface (gui) should open. It may open behind Spyder, in which case either minimize Spyder or select the gui from the taskbar.



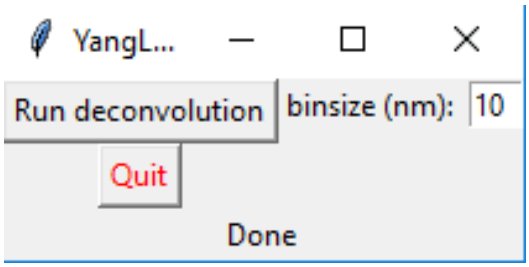
e. Set the binsize to desired size then click “Run deconvolution” and use the window to navigate to the .csv file containing your xy data.



f. After you select the .csv file with your xy data, click “Open”. After a few moments, the deconvolution of the xy data will be performed and another window will open prompting you to save the results to a location.



g. After you click “Save”, the results will be saved to a .csv file in that location and the gui message will read “Done”. The data can be used to test sample data (provided) as well as reproduce the results from the 6 cilia in Figure S11.


YangL...
Run deconvolution
binsize (nm):
10
Quit
Done