2.050J/12.006J/18.353J Nonlinear Dynamics I: Chaos, Fall 2012

Matlab primer

The objective of this document is to get you to a position where you can complete the MATLAB portion on the second problem set. It is by no means a comprehensive introduction to MATLAB.
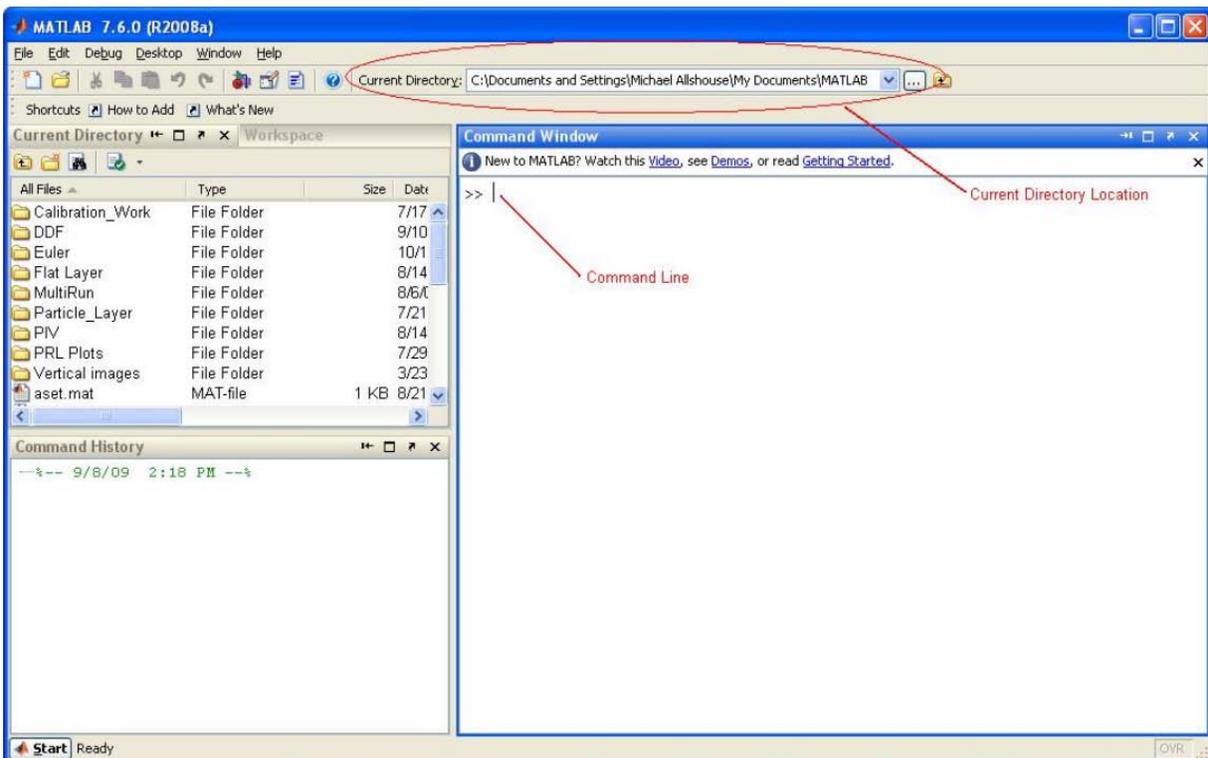

Figure 1: Example of a MATLAB window GUI

1 Download MATLAB

If you do not already have MATLAB on your computer you will need to download it on the MIT website http://web.mit.edu/student-matlab/ . This is a free package that only requires you have an MIT certificate on your computer. Downloading it might take a while. If you don't have a certificate, you can use Matlab at Athena clusters.

2 Download MATLAB Codes from Course Website.

Once MATLAB is up and running on your computer you will need to download the codes from the course website. Make sure you put this file in the Matlab working directory (to be discussed in the next section).

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3 Working in the MATLAB environment

After the download is completed, open the application. You will be brought to the MATLAB window (see an example in Figure 1). At the top center of the GUI is the command directory location bar. You can put in whatever directory you would like to work out of. Put the M-files you download from the course website in the working directory. To the left of the GUI is the list of files in your Command Directory; make sure that the M-files are there. Finally the command line is where you will start to run different commands (try a couple things in this window, for example: `1+1`, `sqrt(9)`, `a = [1 2 3]';` `figure(1); plot(a);`). To make sure everything is working fine type in `help name-of-the-file.m` in the command line. If the files are in place a brief message should come up in the Command Window.

If you need help and examples with any matlab function, for example `plot`, type in `help plot` . A description of the function with several examples will appear.

4 Working with the M-files

Within MATLAB there is the ability to write programs which can complete certain tasks. These files are called M-files, and you just downloaded the example ones for this Pset. You will start to write your own M-files as the course goes along. In order to open the M-files, find the file you would like to open in the Current Directory window on the left side of the GUI. Alternatively you can use the Open selection in the File drop down in the top left of the GUI. You will have to modify the file you got for this Pset a little bit. The examples within the code that you can use as a template.

5 Comments

We will continue to use MATLAB on a regular basis and you will be expected to have developed a certain skill set after each Pset. In this case we are expecting that you are capable of opening MATLAB, working with M-files, inputing data, and working with plots. There is a great set of support files built into MATLAB. Simply, type in `helpdesk` into the command line.

Also, within the help files there is a section on matrices and arrays that you should be familiar with. This section is located in `MATLAB >> Getting Started >> Matrices and Arrays`. The opening page of this section is shown in Figure 2.

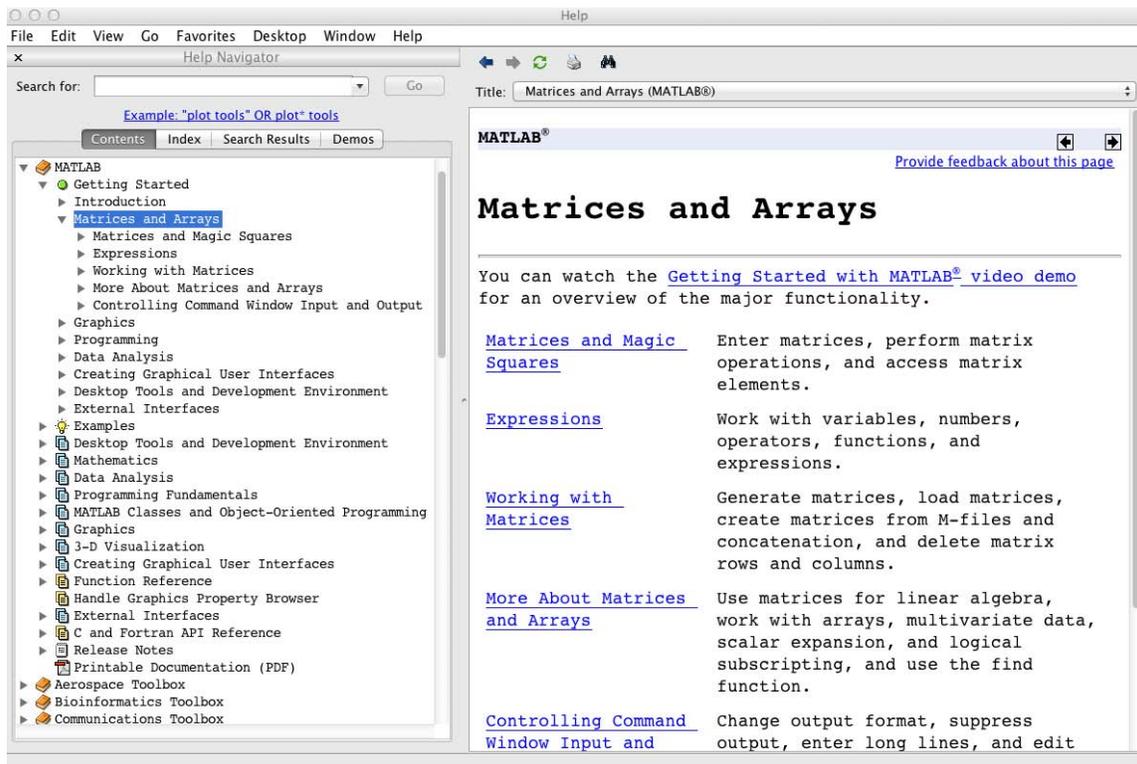# 6 Other Matlab resources at MIT

Software at MIT: http://web.mit.edu/matlab/www/

Figure 2: Example of *Matrices and Arrays* in `helpdesk`

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