

MATLAB Practice Problem

This exercise is meant to familiarize you with a few of the basic operations that you may need to be able to perform in MATLAB. You will load 3D data, plot it, and do a least squares fit on a subset of the data. I've included the names of the functions that will be helpful in each step. Use help "function name" to find out what it does and how to use it.

You will first need to download topo.dat from
<http://www.gps.caltech.edu/classes/ge102/matlab/matlab.html>

Then write a script that will do the following:

- 1) load the data
load, textread
- 2) convert the x,y,z vectors into matrices
reshape
- 3) plot the data in 3D
surf
- 4) extract a line along $x=1.2$ (i.e. find the y and z values where $x=1.2$)
find
- 5) fit a straight line to the extracted data ($z = my + b$)
polyfit, polyval
- 6) plot the extracted data and best fit line using subplot
subplot, plot, hold on
- 7) plot the residual on a second subplot in the same figure
subplot, plot

My solution script is available on the webpage.