

A Tutorial on How to Curve Fit a Random Set of Data

Why do I need to curve fit a sets of data?

While you're analysing your data you need to at a certain stage of the project to curve fit the data. MATLAB provides the user with the required curve fitting tools. Curve fitting is the process of constructing a curve, or finding a mathematical function that best fits a series of data points.

Example:

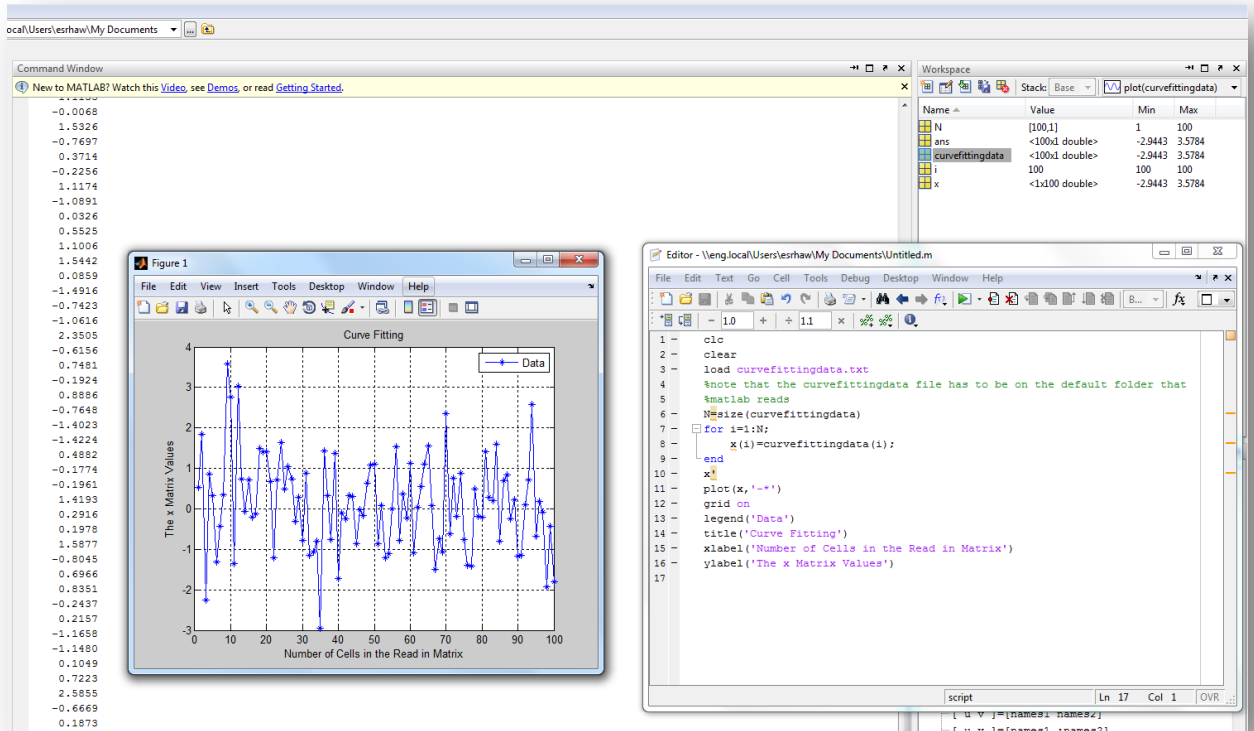
You need to down load the data file form the website and paste it on the directory that is specified as MATLAB main folder. Or you can generate a column of data and save it on a note pad file. Save it with a file name: curvefittingdata.txt.

The following code

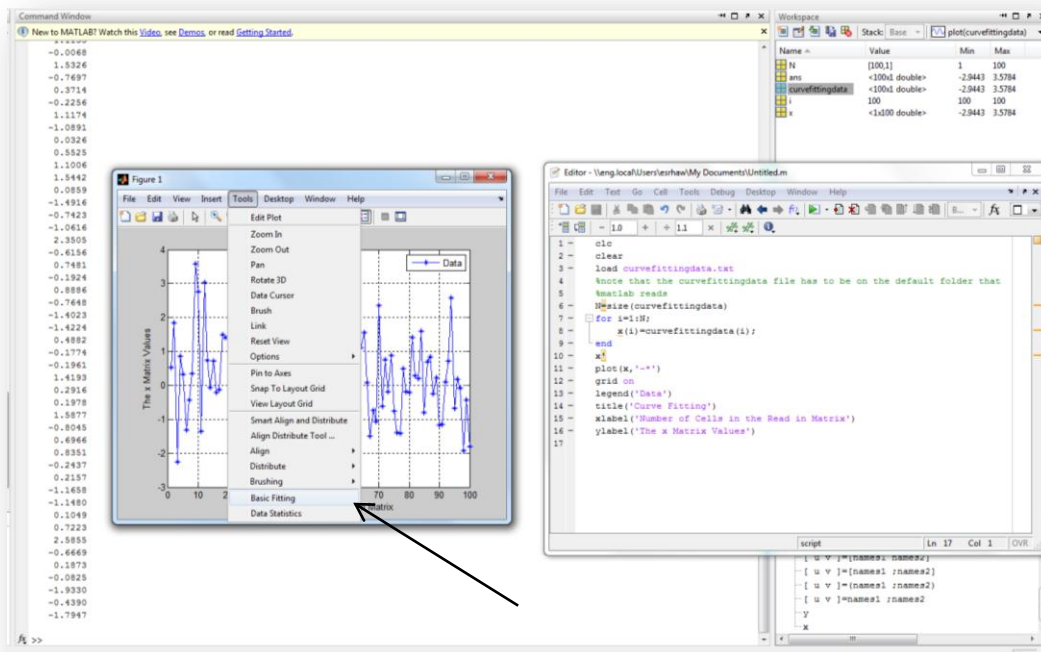
- 1- Loads the data.
- 2- Calculates the size of the read in matrix and assigns the read in values to a matrix called x through the use of a one dimensional do loop.
- 3- Plots the data

```
clc
clear
load curvefittingdata.txt
%note that the curvefittingdata file has to be on the default folder that
%matlab reads
N=size(curvefittingdata)
for i=1:N;
    x(i)=curvefittingdata(i);
end
x'
plot(x, '-*')
grid on
legend('Data')
title('Curve Fitting')
xlabel('Number of Cells in the Read in Matrix')
ylabel('The x Matrix Values')
```

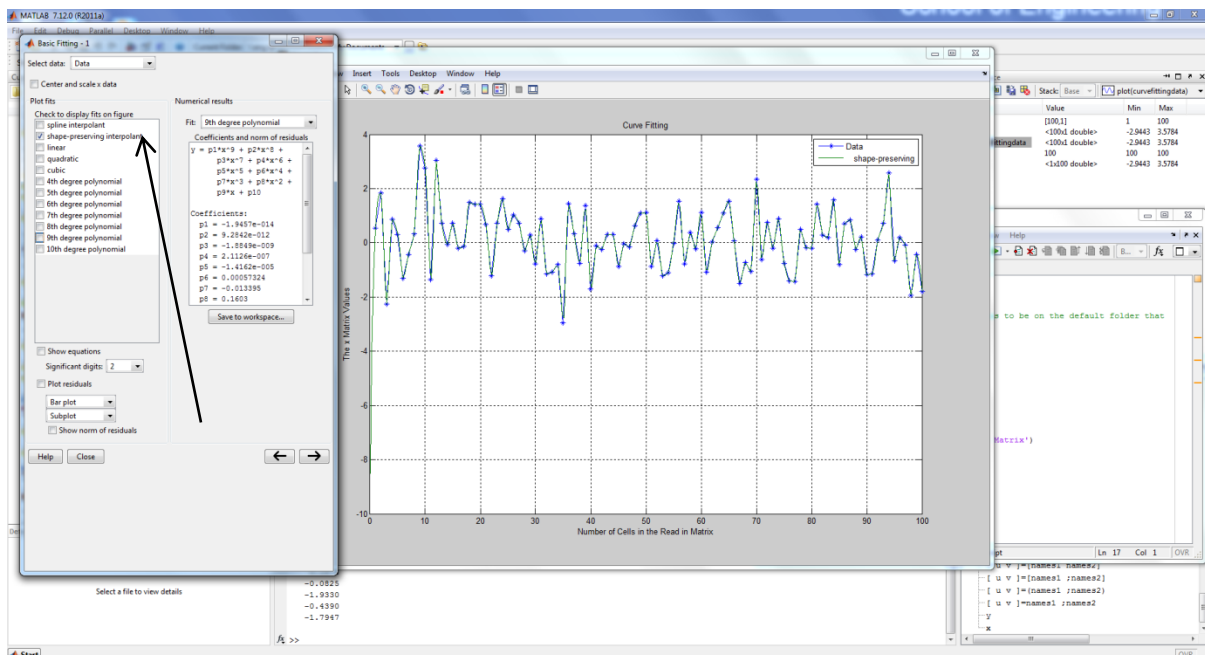
Once you run the code the output you get should be as shown below:



Then to access the curve fitting tools go to tools and select Basic Fitting:



Select Shape-preserving Interpolation, you will notice that a green curve has been plotted over the blue one. Looking on the numerical results section you will see the formula resulting from the curve fitting process with the p constant values referred to as coefficients



The user can try the other available options which he sees fit best to his data: linear, quadratic, cubic, spline interpolation ...etc.

That's the end of the tutorial I hope that was helpful please feel free to contact me regarding any mistakes or recommendations for the tutorial.

Ahmed Al Makky

A.al-Makky@warwick.ac.uk

<http://www2.warwick.ac.uk/fac/sci/eng/pg/students/esrhaw>