In learning about Octave or Matlab, I learned that Matlab is a program used by engineers and scientists. Matlab mostly deals with matrices and arrays. I was first introduced to Matlab when I was at Drexel. We used it for all our math classes there to analyze the functions more. Matlab’s accessibility with using matrices is outstanding. It seems that Matlab is mostly for matrix manipulation. Every math problem can be solved on Matlab. Graphing from Matlab is also very simple. All you need to do is call the method plot. The output for a matrix looks like:

Scatter chart

Description automatically generated

It is convenient since the output formats the matrix perfectly for the user to read. You can do matrix multiplication, addition, inverse, eigenvalues, and much more. The uses that Matlab has been outstanding. From looking at its documentation and searching for applications, you can see how engineers utilize this program. Here is a snippet of the applications.

Graphical user interface, text, application

Description automatically generated

I also did not really need a tutorial on Matlab since I learned it a couple of years ago. I more needed a little refresher of how Matlab works.

In the graphing with using Octave or Matlab. I used Octave in this case since it is a free program compared to paying for Matlab. In the project I created two one dimensional arrays named x and y. With the x being an array from and the y array being x.^2. The “x.^2” command will increment over x and square the value. The graph is shown below.

Chart, line chart

Description automatically generated

Now for the salter, I looped over the length of y. With every iteration using the line:

y1(i) = y(i) + randi([-1000,1000])

the randi command will get a random number from -1000 to 1000. I take that value and add it to the given y value at the position of “i” and set it to y1 at position “i”. This completes the salter for this program. The graph is shown below.

Chart

Description automatically generated

The smoother was very simple since I used the octave rolling mean method. I can smooth the entire salter array in one line. The command I used is movmean(y1, 8) with y1 being the salter array and 8 being the window size. The graph is shown below.

Chart, line chart

Description automatically generated

I smoothed the graph a total of six times to see if the graph would change. The rest of the graphs are shown below.

Chart, line chart

Description automatically generated

Chart, line chart

Description automatically generated

Chart, line chart

Description automatically generated

Chart, line chart

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Chart, line chart

Description automatically generated

Works Cited:

<https://www.mathworks.com/products/matlab/why-matlab.html#:~:text=1.-,MATLAB%20Speaks%20Math,control%20design%2C%20and%20other%20applications>.

<https://ctms.engin.umich.edu/CTMS/index.php?aux=Basics_Matlab>

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