

# Digital Scanning Report

## Andrea Rica Advincula

This activity allows us to recreate hand-drawn plots from other sources using image processing. The image I used is grabbed from a digital copy of *Physics by Computer: Programming of Physical Problems Using Mathematica and C. Springer* by Kinzel and Reents using the Snipping Tool in Windows (Fig. 1).

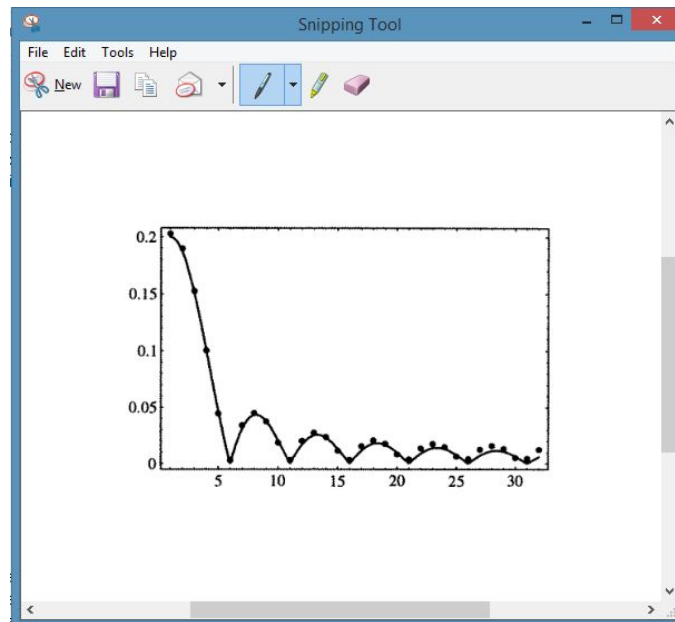


Figure 1. Hand-drawn plot grabbed from a programming textbook using Snipping Tool.

I opened the cropped image in GIMP to take the pixel coordinates of the minimum and maximum values of the x-axis, and y-axis. I obtained a conversion of  $25.93 \frac{\text{pixels}}{x\text{-unit}}$ , and  $2505 \frac{\text{pixels}}{y\text{-unit}}$  for the x-axis, and y-axis respectively. From these, I can now easily convert pixel coordinates into their corresponding (x,y) unit values. I take the pixel coordinates of the data points, convert them to x-y units, and I plot them using MatLab (Fig. 2).

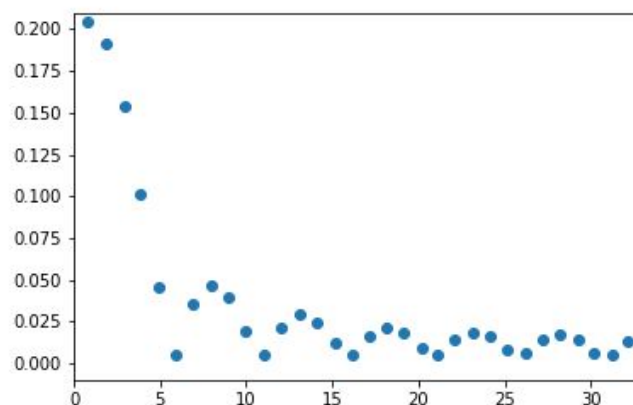


Figure 2. MatLab plot of the obtained data points from the grabbed image using pixel-to-unit conversion.

I overlapped the grabbed image, and the MatLab plot in GIMP by varying the opacity of the produced plot. It clearly shows that the data points from the two graphs match with only a few discrepancies. I can therefore conclude, the digital scanning is successful.

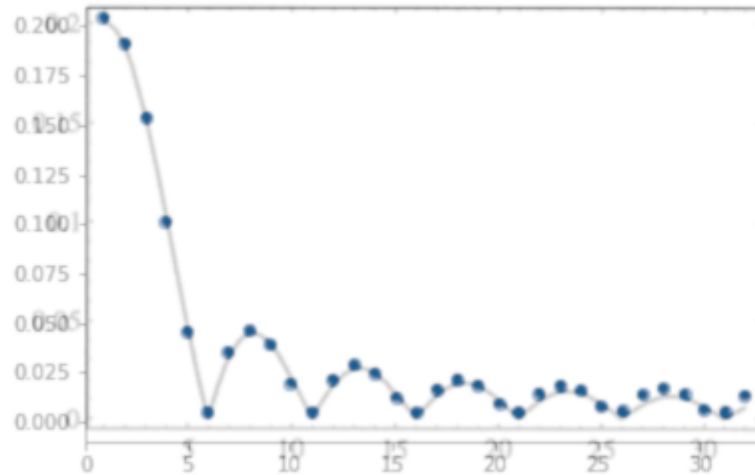


Figure 3. MatLab plot overlaid on to the original graph to show matching data points.

Moreover, you could also fit a function from the data points acquired to extract more information. For this activity, I rate myself 11/10 for accomplishing all the requirements, and an additional point for showing an overlay version of the original and the digitally scanned output.