

Data Visualization Techniques (COS701)

Problem 1

1. Write a short program to generate data points for displaying the curve $y = x^2$. Plot the data.
2. Add noise to y data points generated above by $y' = y + r * s$, where r is a random number between -1 and 1 and s is a scaling factor that controls the strength of the noise. Choose s appropriately to generate noise and plot the data set.
3. Write a simple filter program by averaging the data points to smooth the plot in 2. You may use any programming languages and ready-made random number generators but not in-built smoothing programs. Investigate the relationship between the strength of the noise and the number of times you need to run the filter program to smooth the noisy data set.