**ECE 4822: Engineering Computation IV**

**Homework No. 3: Numerical Libraries**

**Goal:** Assess how efficient Boost, STL and Eigen are compared to your “fast” algorithm implementation.

**Description:**

Repeat HW #1, but use the Boost numerical library, then use the Standard Template Library (STL), and then Eigen. If you use this code as a starting point:

*https://www.isip.piconepress.com/courses/temple/ece\_4822/homework/current/hw\_03/*

you will automatically compile and link with Boost and the STL.

If you want to experiment with other, faster C/C++ libraries, that is okay as well. Just be sure to explain what you are doing and produce a plot that documents the improvement in performance. Just be sure to only use single-threaded approaches.

What we are exploring here is the extent to which ‘professional programmers’ can write highly optimized C/C++ to beat the performance of your solution to HW #2. If the performance is not significantly better, then we have two more avenues to explore: parallel processing on a CPU, and parallel processing on a coprocessor like a GPU.

Your solution should be a nice plot exploring the differences between HWs #1, #2 and #3 for matrix multiplication.