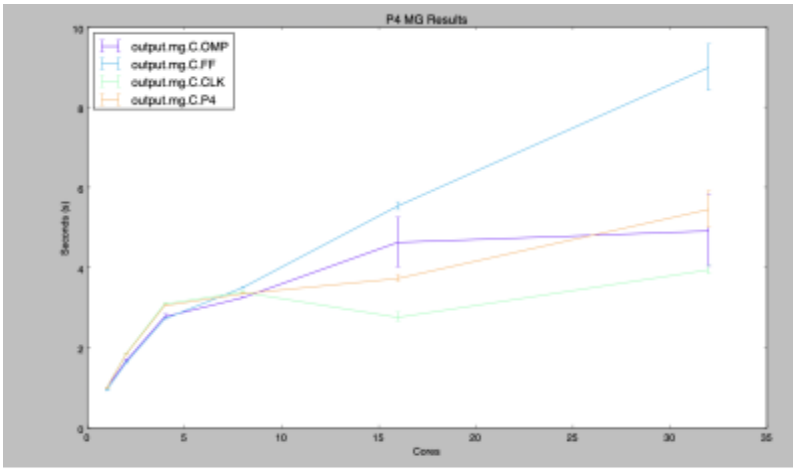
CSE 539S Final Project Proposal

Amanda Hua, Funda Atik

For our final project we would like to performance engineer the Cilk and OpenMP versions of Multi-Grid (MG) benchmark by first exploring the given code, then determining areas for optimization and speed up. The baseline parallel implementations written using the OpenMP, Cilk and FastFlow (FF)[1] are provided to us by Professor Lee's PhD student. According to the given scalability figure below, we see that there is a room for improvements for the Cilk and OpenMp versions based on the FF version. Specifically, we would like to analyze the performance achieved by these three parallel implementations and have a better understanding about why the Cilk version and the OpenMp version deliver less performance compared to the FF version. In the second part, we would like to deliver improved performance and scalability for the Cilk version in comparison to the FF version. In our reach goals, we would ideally like to deliver improved performance and scalability for the OpenMP version as well. We will provide several graphs that compare the original code versus our improved code's performance for each implementation.



The Scalability Figure 1

Sources

1. D. Griebler, J. Loff, G. Mencagli, M. Danelutto and L. G. Fernandes. Efficient NAS Benchmark Kernels with C++ Parallel Programming. In proceedings of the 26th Euromicro International Conference on Parallel, Distributed and Network-Based Processing (PDP). Cambridge, United Kingdom, 2018.