Cole Fettkether
COEN 145

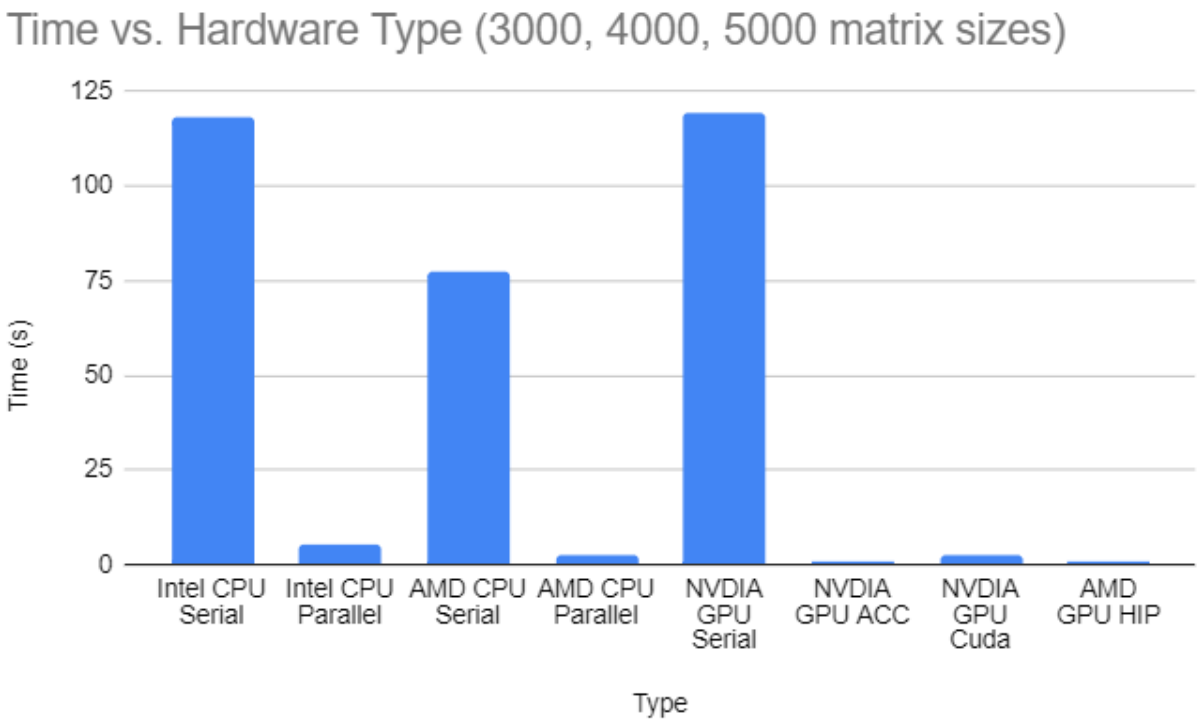
Lab 7: Comparing Matrix-Matrix Multiplication across CPUs and GPUs

Introduction

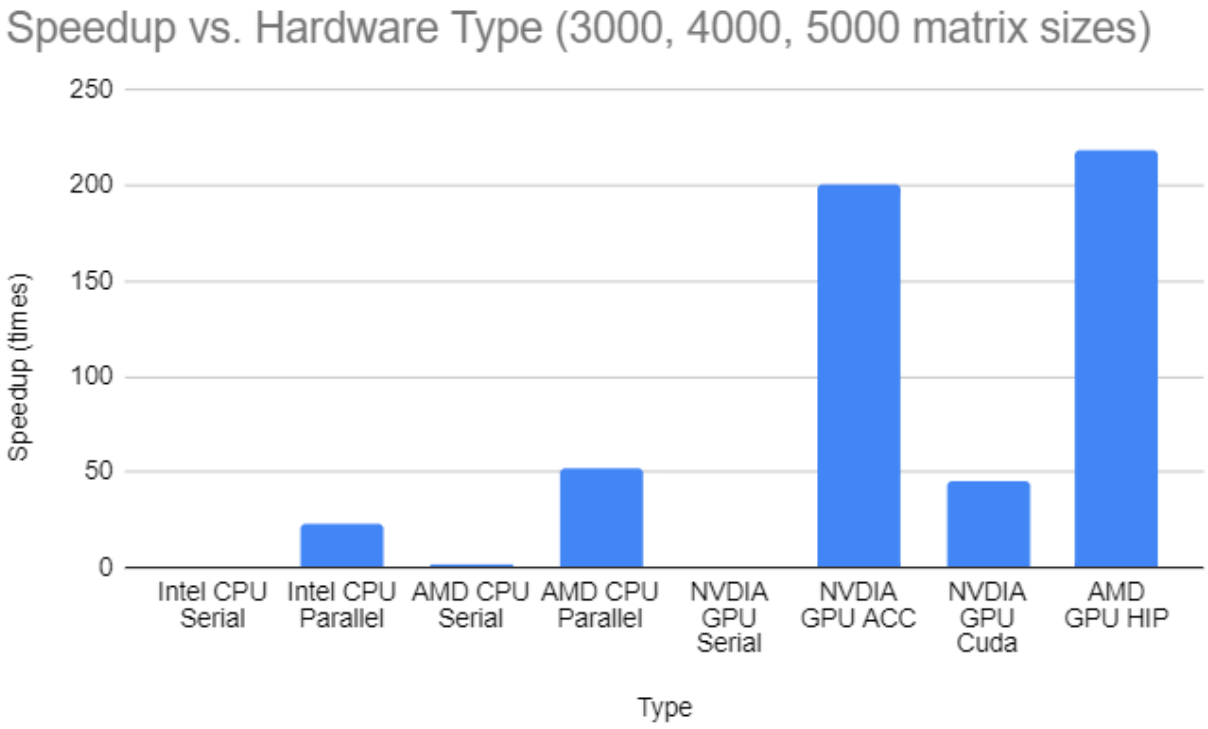
This lab explores how different hardwares and parallelization strategies can be used to speed up matrix-matrix multiplication. First, it compares serial and parallel runtimes on the Intel CPU, then on the AMD CPU. Next, it runs them on the NVIDIA CPU, using Open ACC, CUDA, and Serial Programs. Finally, it tests them on the AMD GPU using HIP.

Analysis

Below are graphs showing the speedup among different strategies. The Serial algorithms on the Intel CPU, AMD CPU, and NVIDIA GPU serve as a base to compare to the parallel algorithms.



Below is the speedup for each setting. As you can see, HIP on the AMD GPU is the fastest, followed by the NVIDIA GPU using ACC.



Conclusion

This information is important as it is essential to understand how different programs interact with different hardware to achieve maximum speedup.