Milestone Report for Research on Oblivious Algorithms

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https://mkpjnx.github.io/ObliviousSort/

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1 Progress Update

We have done some initial timing investigation on a 64-core virtual machine on AWS. We are able to attain 30× speedup on the parallel version using the OpenMP framework. I am now working on determining the bottleneck, which may very well be a limitation of the parallel framework itself. Professor Shi suggested that I write a simple program using OpenMP to obtain some baseline on the parallelization overhead to compare against. I am presenting my findings this week during our meeting.

Taking a step back, this week I plan on discussing the broader scope of the project with Professor Shi, and present some potential research questions that can better guide our investigations moving forward. This will also be helpful for planning the poster session I will be participating in.

2 Looking Forward

I am not quite sure what Professor Shi has in mind for the next few weeks. We are still evaluating the parallel version of the algorithm, with the end goal of releasing it to the public. Some questions that could guide us to this goal include:

- What parts of the implementation can have improved readability?
- What performance optimizations should we forego for the sake of readability?
- Are there "obvious" optimizations that should not be omitted?

In the meantime, I will document the code more thoroughly to help guide potential readers.

3 Milestone Adjustments

We are on schedule with the evaluation of the parallel version implementation, but the comparison with bitonic sort is pending the completion of our implementation.

4 Resources Required

I am somewhat concerned about usage costs on AWS. I am currently using Marcia's leftover AWS credit from a class last semester, but in the case we exhaust those credits we will discuss the problem with professor Shi.