Project Milestone Report

Bella Liu
Derek Duenas

Update on the weekly schedule

Week 1	Project ideation / proposal (Bella)
Week 2	Implement serial solver (Bella)
Week 3	Start on OpenMP solver (Bella) Start on MPI solver (Derek)
Week 4	Milestone Update (Bella)
	Finish OpenMP solver (Bella) Finish MPI solver (Derek)
Week 5	Run program and obtain result (Bella)
	Attempt CUDA implementation (Derek)
Week 6	Finalize report (Both)

Summary of Current Work

At the milestone point, we have successfully set up the base code environment for displaying sudoku puzzle, importing and running sudoku test cases. In addition, we have implemented the serial version of sudoku solver, which can handle sudoku sizes of 9 x 9, 16 x 16, and 25 x 25.

For the serial sudoku solver, the program can finish a sudoku puzzle of 9 x 9 within 1 second, a 16 x 16 sudoku around 10 seconds, and a 25 x 25 sudoku around 1 minute. The solving time is dependent on the difficulty of the puzzle.

Goal progress & Concerns

The project is progressing mostly according to the weekly plan. The planned deliverables, which are serial sudoku solver, OpenMP parallelization sudoku solver and MPI parallelization sudoku solver, should be able to be achieved.

The only concern so far is that the “nice to haves” goals, which is CUDA parallelization sudoku solver, might not be entirely completed. But there should be enough time to make a reasonable attempt.

Poster session

The goals for the project remain largely unchanged:

- Backtrack algorithm serial sudoku solver

- OpenMP parallelization sudoku solver
- MPI parallelization sudoku solver
- CUDA parallelization sudoku solver *(Extra goal)

For the poster session, the display would be:

- Demo of the program solving sudoku of sizes 9 x 9, 16 x 16 and 25 x 25
- Graphs will be displayed to show the serial vs. openMP vs. MPI performance with respect to
    - different sizes of sudoku
    - different threads/cores
    - GHC machine / PSC machine