Final Project

For your final project you will work on solving a problem related to this course. Generally, this means solving a problem in a parallel or distributed manner. I will give some examples later. The project grade is composed of 3 parts: the proposal, the project itself, and the presentation. Students in 258 may work in groups of 2, students taking 458 must complete the project individually.

The Proposal:

Due end of day 4/7 (this Sunday)

Upload a document with a project proposal (up to 2 pages). The goal of the project is to demonstrate what you've learnt from the course.

Therefore, your proposal should clearly identify:

- What your project will do,
- How correctness is evaluated,
- How you will compare and performance (if relevant),
- Specific topics in the course that are relevant to your project.

The Project:

Submission due end of day 4/29

This is where you actually implement your solution. You should get as close to a completed version as possible. Feel free to use the instructional network. Your project submission will also include:

1. A report that contains the algorithms (written is pseudocode, a very high level explanation of what's going on), methods, parallelization details, implementation details, experimental results, and anything else you think would be useful for grading.
2. Your source code, including a README.txt explaining anything relevant for how your project works, steps needed to get it to run, etc.
3. Raw data from your experiments. You of course should analyze this data and have that reported in your report (see 1), but include your raw data with your submission as well.

Your project report must demonstrate a high quality of writing - use citations, clearly label graphs and tables, etc. Your report is not a journal/conference submission, but as close to that quality as possible.

The Presentation:
(presented 4/24 or 4/29, slides and such due to me by 4/29)

You will give a 10 - 15 minute presentation in class on either 4/24 or 4/29 (we will do signups by 4/19). Your presentation should essentially be a summary of your report. Make sure you clearly state the problem you are solving, the approach you used to solve it, and what your results were. Additional information to add if you have time would be why solving the problem is important (why do we care), relevant background, difficulties you encountered, and future work.

Examples:

Parallelization:

Take a problem and parallelize it! The problem should not be trivially parallelizable - this will not lead to a great project. Ideally some synchronization should be involved. Problems with long computation (like NP-Complete problems or graph algorithms) are ideal candidates.

- SAT solving
- Largest Clique
- Graph Coloring
- All Pairs Shortest Path

Parallel Data Structures:

Create a data structure for use in parallel algorithms. The MLS queue is an example.

Distributed Systems:

Similar idea to parallelization - take a problem and solve it using distributed systems.

Something else?

If you have an idea, run it by me! I don’t want you stuck doing something you’re not that interested in.