CS 653 Topics in Programming Language Implementation — Fall 2011 Project
Parallel Programming Model Project Due Sept 13, Sept 29, Oct 11, Oct 25, Dec 11, 2010

The goal of this project is for you to get in-depth experience working with and evaluating a parallel or sparse programming model. A meta-goal is for you to learn how to organize, propose, execute, and present a research project.

1 Guidelines

You may work by yourself or with a partner on this project. Obviously, if you work with a partner, your combined project should be more ambitious than if you were working by yourself.

You may experiment with a parallel or sparse programming model for this project. I have provided a list of possible projects at `http://www.cs.colostate.edu/~cs653/Project/possible-projects.html`. You may also propose a project that is not on this list. Either way I highly recommend that you discuss the project with me in office hours before writing your first proposal. Insufficient proposals will need to be rewritten.

2 Deliverables

For each deliverable, you need to submit an electronic copy by email to mstrout@cs.colostate.edu.

2.1 Preliminary Project Proposal and Proposed Tool Example (5% of course grade)

Due: September 13, 2011

The preliminary project proposal should be one paragraph describing what problem you want to solve in your project, what your approach will be, and how you expect to evaluate your approach.

The Proposed Tool Example should be approximately two pages describing which tool you plan to use within your project, how you plan to use the tool, and a DETAILED plan for a tool example project where you will be navigating the part of the tool learning curve relevant to your research project. The tool example should be similar in scope to the "Writing a Walker" piece of project 2 from CS553 2005. See `http://www.cs.colostate.edu/~mstrout/CS553/projects/project2.pdf` for more details. If you were planning on using a programming model, then your tool example could be writing 3 small algorithms in the programming model. You have to motivate the tool example based on your project idea.

2.2 Proposal (5% of course grade)

Due: September 29, 2011

The proposal should include a description of the problem you will solve, your approach to solving the problem, the tools you will use, how you will evaluate your approach, and a *detailed* time line for the project. At the time you write your proposal you should be familiar with the tools and/or programming models you will

be using. The proposal should be no longer than 3 pages of text unless you are doing your project with a partner, in which case it can be up to 4 pages.

Unsatisfactory proposals will returned to the students for revision.

As a separate part of the proposal, you will be submitting the results of your tool example implementation. The results should be in the form of a wiki entry on the department wiki at http://www.cs.colostate.edu/wiki. Another person should be able to step through your instructions to quickly start using the tool you just learned using an example that you provide. Also summarize any issues you had while working with the tool.

2.3 Verbal Status Report (5% of course grade)

Due: October 18th, 2011

Midway through the project, you will be presenting your research problem, approach, and current status. Your verbal status report will be limited to three slides and 15 minutes. Included in the 15 minutes is time for the class to provide feedback and discuss any issues you may be having. The slide limit and time limit is strict. You will be graded on your presentation skills, therefore you should practice this talk ahead of time.

See the "How to Give a Talk" slides posted on the progress web page for an example progress report.

2.4 Intermediate Report (5% of course grade)

Due: October 30, 2011

At the time you write this document you should already have implemented a working prototype of any implementations you plan to do. This document should describe what you have built in detail and what challenges you faced in finishing it. You should also describe how you have tested the prototype. This document should be no more than 5 pages of text if you are working by yourself and no more than 7 pages if you are working with a partner.

2.5 Final and Poster (10% of course grade)

Due: December 13th, 2011

The final report should be in the form of a 6-10 page conference paper (e.g., you could use the IEEE double-column latex format). As with a conference paper, the final report should describe and motivate the problem, present the approach, and evaluate the approach. Make sure that you answer all of the questions we have been asking about papers in our reviews when you write your own paper. When you submit this document, you should attach the "proposal" and "intermediate" documents to it.

During the finals time slot for this class (December 13, 2011 from 9:40-11:40am), you will also be presenting a poster on your project.

3 Acknowledgements

Writeup adapted from Amer Diwan's writeup for a similar project: `http://www-plan.cs.colorado.edu/diwan/7135/project.html`