Parallel Algorithms
Project Guidelines

The project will be done on an individual basis. It has three main components:

- Topic research
- Program/algorithm development
- Experimentation

Each of these components will count in determining the project grade. For topic research, you should examine the current relevant published literature and write a description of the topic including the main research issues. You should read at least new three (3) published papers that directly relate to your topic and comment on their content in your report. **I am looking for insight here, not a rewrite of the abstract/conclusions.**

Each project requires the development of a program. This means that very good programming skills are essential for completing the project successfully. The experimentation section involves three components: (i) experiment design, (ii) description of work done, and (iii) an analysis of the results. Experiment design is perhaps the most difficult of these. In your design you should indicate what you intend to do and why, and identify the "image" data to be used; you should have your design checked by the course instructor. A description of the work done should be straightforward. You should indicate your analysis procedure in your experiment design.

Important Deadlines

- *Project Topic:* 2nd week
- *Project Outline*: 3rd week
- *Interim Report*: 4th week
- *First presentation*: 5th week
- *Final Report:* 6th week
- *Second presentation*: 7th week

Project Topic

By 2nd week, you should have selected a project topic. I will provide you with a list of topic and ideas for possible projects but you are also welcome to discuss with me any ideas of your own.
For Example:

- Decomposition Techniques
- Mapping Techniques for Load Balancing
- Parallel Algorithm Models
- Parallel Sorting Algorithms
- Minimum Spanning Tree parallel Algorithm
- Parallel Algorithm Applications
- Dynamic Programming

Project Outline (1-2 pages)

The goal of the project outline is to specify a plan of work. By 3rd week, you should have completed the literature search and have a good idea about the data and experiments you plan to perform. Your project outline must contain the following sections:

1. An overview section which outlines what the project topic is and what will be done in the project.

2. A brief review of the project topic (described what else has been done in this area and what are the major approaches).

3. A section on experiment design. This should describe what you intend to do, what image data you will use, and how you will evaluate the results.
4. A section on the project plan. This should include an overview and an itemized list of steps that you intend to take to complete the project.

Interim Report (10-15 pages)

You should turn in your interim report by 4th week. By that time, you should have produced some preliminary results and also have a better idea of what needs to be done and how. Your interim report should include the following sections:

1. A detailed overview section which outlines the project topic, what has been done up to this point and what remains to be done.
2. A detailed review of the project area including reports on at least three (3) papers in the area. These papers should preferably be recent research papers and you should describe the contribution made by each paper.
3. A detailed section on experiment design. You should describe in detail what image data you have used in your experiments as well as the experiments.
4. Preliminary results. Include any preliminary results you might have obtained.

Final Report (15-20 pages)

A version of the final report MUST be handed in on May. In some cases, an extension may be given for a report addendum that includes some new and exciting results. The final report should include a title, an abstract, an introduction, the body of the report, and a conclusion.
The body of the report for the project should contain three main sections: a review of the project topic, a discussion of your program implementation, and a description of the experiments that you conducted with a discussion of the results obtained. In addition, manual page documentation for your program and a listing of your program should be included as appendices. Make sure that your program is well commented and that the documentation page contains sufficient details about the programs operation and parameters. In summary, the final report should contain the following:

1. A one paragraph abstract outlining what the project is and what was achieved.
2. A review of previous work done and the current issues in the project topic (including the three references).
3. An overview of the remaining sections of your report (may be one paragraph).
4. A description of the experiments that were conducted
5. A description of any programs that you developed.
6. A section on the results and observations from your experiments.
7. A conclusion, summarizing the achievements of the project and suggesting future work.
8. A listing of your program
9. A one page documentation for your program.

Important comments

• Deadlines are hard deadlines! You must hand in what you have on time even if it is not complete.
• It is best to start early and to finish early. It will probably be hard to impossible to get access to the workstations during the last week of classes.
• There are three components to the project: topic research, program development and experimentation. **A balanced project will get the most credit.**