Integrated Systems Design: Introduction to Formal Verification
CPSC 513, Term 1, Winter 2005–2006

Mini-Project Description

This offering of CPSC 513 is intended to focus on the breadth of formal verification methods, rather than depth in a particular subarea. Standard graduate course projects encourage narrow depth rather than breadth, and you end up focusing a large portion of your energies in the latter half of most such courses on the project topic, rather than continuing to learn general information about the subject area. On the other hand, a project allows you to tailor your investigation of the subject area so that it more closely matches your interests, as well as getting a feel by reading the literature for how research is performed in the subject area.

In the hopes of achieving a happy medium, CPSC 513 will have a "mini-project" this year. In essence, this project will consist of the first half of a typical project. You will be expected to pick a general topic area, perform a literature review, and propose a specific research project that could form the basis for a masters thesis (a "masters thesis proposal"). For the purposes of CPSC 513, you are then finished—you are not required to complete or even start the research that you propose. The mini-project should require some reading and some thinking, but no coding and no serious analysis.

Your project has only two deliverables:

date	deliverable
November 17	topic area selection
December 5	literature review and proposal report

The topic area selection should be one half to one page in length. It should outline what area you wish to investigate, where you can find relevant literature, and an initial rough idea of the project. It will not be graded.

The literature review and proposal report will be a 5–8 page report, including bibliography and figures. It should contain the following information:

- Title, author name, author affiliation, date.

- Introduction: Motivation of your problem, starting from a broad level and narrowing to your particular problem. Brief description of the specific problem you will solve.

- Background and related work: Discusses previous results in this and other fields, and how they relate to what you propose to study. This section should be roughly half the report.

- Problem formulation: Describe the problem in detail, generally introducing a mathematical description. Explain what steps would be necessary to solve the problem, and how you will judge the success or failure of the research.

With respect to your grade in CPSC 513, the final report will be weighted roughly the same as 1–2 homework assignments, and should require about the same amount of work.

You may choose your topic from among those suggested by the professor, or you may design your own topic in consultation with the professor. Your topic may be combined with research in other fields, should you wish. If you design your own topic, and especially if that topic is a portion of a larger research undertaking, it is important that the final report focus on the formal verification components of the proposed research.

You may use whatever document production system you prefer, but please submit your reports in pdf format. I prefer LaTeX, which is available on the departmental computer system or as the free "MiKTeX" package for Windows machines.