CS 745 (Fall 2004): Computer Aided Verification (Introduction to Formal Methods)

Lecture 10: Presentations, Project Discussion

Nancy Day

DC 2335, nday@cs.uwaterloo.ca

Office Hours: Mon 11:30-12:30, Thurs 3-4pm

http://www.student.cs.uwaterloo.ca/~cs745

uw.cs.cs745

Today's Agenda

- Two presentations
- Project discussion
- SMV: modules, concurrency, and fairness (continued from last class)

Course Projects

Worth 45% of your grade. You can work in pairs or alone.

- Project Proposals (0%): Mon 8 Nov 2004
- Project Presentations (15%): Mon 6 Dec 2004
- Project Reports (30%): Fri 10 Dec 2004

Projects

- Choose a system to verify. The system could be code, hardware (at any level of description), a protocol, or an algorithm, etc. What would you like to verify about this system?
- Choose a tool in which you can model the system and verify the properties. See the tools mentioned in the notes and on the "References" course web page. Also, check out:

  Formal Methods Repository
  `http://www.afm.sbu.ac.uk/#notations`
- Another option is to take a paper you've read and try their technique on a different system description.

Note: gradually build up the size and complexity of the system description, so we can scope the project appropriately to be completed in the remaining time.

Step 1: Form Your Group

Please send me email by Mon Oct 25th stating who is in your group.

Step 2: Project Proposals

Present your chosen system and your recommended approach to verify the system. This presentation will be short (approx 10min). You'll receive feedback from me and the rest of class. This presentation is not worth any marks and should include (briefly):

- system description
- what you want to verify about the system
- characteristics of the system and properties (e.g., properties can be expressed in CTL, will require induction or certain expressiveness in specification language)
- the tool you've chosen to use for the verification
- anticipated challenges (e.g., have to do manual abstractions, tool is challenging to learn)

Note: You can probably re-use some of this material in your final presentation.

Step 3: Work on Your Project!

Come to office hours if you have questions.

Use the newsgroup.

Step 4: Project Presentations

- Presentation of completed project.
- Each group members should present part of the talk.
- Describe your project.
- Evaluate what you did:
  - Was the specification notation suitable, sufficiently expressive?
  - How easy was the verification from a user's point of view?
  - How long did it take you to set up the problem?
  - How long did it take learn the tool?
  - How long did it take use the tool for the problem?
  - Would you recommend this solution again?
  - Other relevant factors.

Step 5: Project Reports

Write-up (max 10 pages LNCS style file; shorter is fine). It should have an outline similar to the following:

- Abstract (max 150 words)
- Introduction (include motivation)
- Problem description and motivation
- Method/Tool
- Verification effort
- Evaluation of solution
- Conclusion

LNCS style file will be made available on the course web page. (Note this pretty much means you should use latex to write your report, although you may be able to find Word templates on the web.)

Summary

- Two presentations
- Project discussion
- SMV: modules, concurrency, and fairness

Next class: Explicit CTL model checking

