CSE 505: Computing with Logic

http://www.cs.sunysb.edu/∼cse505/
Mon., Wed. 5:20pm – 6:45pm
Library N 4072

C. R. Ramakrishnan
e-mail: cram@cs.sunysb.edu
Office: 1420, Computer Science
Office Hours: Tue. Thu., 1pm–2pm, or by appointment
http://www.cs.sunysb.edu/~cram

Course Objectives

- Develop a fundamental understanding of logic as a programming language.
- Explore the computatable fragments of first-order logic.
- Study the use of logic for specifying and programming complex systems.

What will you learn in CSE 505?

Logic Programming

- Programming in Prolog
  - Relational Programming
  - Backtracking Search
- Computational Basis
  - Unification
  - Resolution
  - Memoization
- Extensions and Applications
  - Non-monotonic reasoning
  - Logic-based AI

Logic Programming

A framework for unambiguously specifying knowledge and computation

http://xkcd.com/191/

Course Organization

Concepts, examples, program fragments discussed in class.

- **Exams:** One mid-term (40%) and a comprehensive final (40%)
  Will cover reading, lectures and homeworks.
- **Homeworks:** (20% of grade)
  - Non-programming homeworks
  - Short programming assignments

Textbooks

No formal textbook.

- **Programming:** Ivan Bratko, *PROLOG Programming for Artificial Intelligence*, 3rd edition, Addison-Wesley; ISBN: 0201403757.
  Out of print, but available from some online retailers
- **Foundations:** Ulf Nilsson, Jan Maluszynski, Logic, Programming and Prolog, Wiley.
  Online (PDF); linked from course web page

Additional References:

- Michael Spivey, An introduction to logic programming through Prolog, Prentice Hall, ISBN: 0135360471.
- Edmund Burke, Eric Foxley, Logic and its Applications, Prentice Hall, ISBN: 0130302635.

All above books are available on 2-hour loan from the library.

Course Software and Facilities

- **XSB Prolog**, **SWI-Prolog**: freely available for Unix (Linux, Solaris, BSD, ...) and Windows.
- Work from home or use CS Graduate Lab (Suns).

Course Support

Course web pages are partly hosted by the Blackboard system.

- **Course Material:** handouts, homeworks, notes, etc will be available *directly from the course web site*.
- **Course Announcements:** *available from the blackboard system*. Check these regularly!
- **Course Discussion Board:** *Bulletin board available on the blackboard system*.
  Use this to discuss any course-related material: lectures, homework problems, exams, etc.

All homework assignments will be submitted via the Blackboard system.

Questions

How to contact course staff:

- Course staff is likely to be a singleton set.
- Post your question on the discussion board.
- Come to my office during my office hours:
- Send me email. (Post on discussion board unless the question is personal).