ITEC 480-Introduction to Artificial Intelligence
Spring 2005
TR 11:00-12:15 P.M
DA 212

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Office Hours: M 2:00-3:00 P.M. TR 1:00-2:00 PM and other time by appointment

Text Books:


References:

3. Prolog Programming in Depth, Michael A. Covington, Donald Nute, and Andre Vellino, Negnevitsky, Prentice Hall
4. The Art of Prolog, Leon Sterling, and Ehud Shapiro, MIT Press

Description and nature of the course:

1. To present AI technology along with its deep roots in the philosophical, mathematical, and computational traditions. AI as currently practiced is very much both part and product of the scientific evolution.
2. To offer a broad focus on some applications of AI, PROLOG application, symbol-based and connectionist. A good programmer must be aware of possible tools.
3. Finally, to base AI algorithms and techniques in their rightful place within modern computer science. Much of modern computing is a product of earlier research in AI (recursive data structures, object-based design, semantics of programming languages, and so on). Modern AI practice requires a strong foundation and grounding in traditional computing.
For Prolog Programming
1. To introduce a logic programming language centered around a small set of basic mechanisms, including pattern matching, tree-based data structuring and automatic backtracking.
2. To offer a broad focus on some problems that involve objects in particular, structured objects and relationships between them.
3. Finally, to demonstrate the features of a powerful language for artificial intelligence and non-numerical programming in general.

Grading (need to discuss and subject to change)

There are two tests, a mid-term and a final.
There are couples of assignments.
Course credit (tentative): Mid-term 30%, Final 40% and Assignments 30%

Attendance

Although attendance is not required for regular sessions, it is required to follow all instructions in the class. Remember that students are totally responsible for all the covered materials, professor's instructions in class, and assignments regardless of attendance.

Make up test and late work

All late work will not be accepted unless you have a sound prove of emergency situation. You will not be allowed to submit or take any make up assignments, quizzes and tests except emergency situation.

Honor Code

By accepting admission to Radford University, each student makes a commitment to understand, support, and abide by the University Honor Code without compromise or exception. Violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details. In particular, the copying of computer assignments, in whole or in part, will be considered plagiarism. Students may discuss each other in the lab not in assignment programs. Furthermore, consulting with anyone other than the instructor on either the nature or answers to programming assignments is expressly forbidden.
Tentative syllabus (subject to change)

Week 1-3: Prolog Programming (tentative plan)

Introduction to Prolog and Syntax and Meaning of Prolog Programs, Lists, Operators, and Arithmetic and Using Structures: Example Programs, Controlling Backtracking and Input and Output and Build-in Predicates, Programming Style and Technique and Operations on Data Structures

Week 4-15 AI (tentative plan)
Week 4: Artificial Intelligence, its roots and scope
Weeks 5 & 6: The Predicate Calculus
Weeks 6 & 7: Structures and strategies for state space search
Weeks 7 & 8: Heuristic search
Week 9: Architectures for AI problem solving
Weeks 10 & 11: PROLOG in Artificial Intelligence
Week 12: Introduction to AI representational schemes
Week 13: Rule-based, case-based, and model-based systems
Weeks 13 & 14: Building an expert system in PROLOG
Week 15: Reasoning in situations of uncertainty, Advanced AI applications

Special Attention

This course includes philosophical, mathematical, and computational thinking. Since modern AI practice requires a strong foundation and grounding in traditional computing, some students who already have good background on discrete mathematics and theory of computation will have advantages.

Prolog is different from other traditional programming languages such as Ada, C, C++, and Java. It includes philosophical, mathematical, and logical thinking.

All students are expected to read materials and have a good habit of thinking power everyday.