

CS 537—Advanced Expert Systems

Spring 2011

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Office Hours: T, Th: 11am to 12pm & 2pm to 3pm -- F: 10am to 12pm

Literature:

- Joseph Giarratano and Gary Riley. *Expert Systems: Principles and programming*. 4th edition,
- Michael Negnevitsky. *Artificial Intelligence: A guide to Intelligent Systems*, 2nd edition, 2005.
- Peter Jackson. *Intro to Expert Systems*, 3rd edition,

Main Topics:

1. Introduction to Expert Systems
2. CLIPS ES shell:
Pattern Matching, Variables, Functions, Expressions, Constraints
Templates, Facts, Rules, Saliency; Inference Engine
3. Knowledge Representation Methods:
Production Rules, Semantic Nets, Schemata and Frames, Logic
4. Reasoning and Inference:
Predicate Logic, WFF/Wang, Inference Methods, Resolution
Hidden Markov.
5. Reasoning with Uncertainty:
Probability, Bayesian Decision Making, Odds of Belief, Sufficiency and
Necessity, Uncertainty in Inference Chains, Combination of Evidence.
6. Approximate / Fuzzy Reasoning: Certainty Factors, Dempster-Shafer Theory,
Fuzzy Logic
7. Expert System Design and Examples.

Grading: Test1: 15%; Test2: 15%; Test3 (take home): 20%
Assignments and Quizzes: 15%
Participation and Attendance: 10%
Final Project: 25%

NOTE: These percentages are tentative; there may be significant changes.

Grading Scale: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F < 60.

Missing Exams: If you should miss an exam (not including quizzes), you must let me know before the exam. You may call me, send me E-mail, or come by my office to inform me. If the excuse is reasonable, I will replace your exam score with your next exam grade.

Attendance: I strongly encourage regular attendance in my classes and will take attendance at the beginning of each class. You are responsible for all announcements and for all material presented in the lecture sessions.

Turning in work: Please turn in your work on time. Your works should be turned in before I start the class, unless I extend the deadline.

Final Notes: 1) Personal laptops and cellular phones are not allowed to be used in the class. 2) During the lab sessions, computers should be only used for doing the lab assignments and reading class materials.