

CMSI 485 ARTIFICIAL INTELLIGENCE

Spring 2008 – 3.0 units

Tuesday and Thursday, 10:50 a.m. - 12:05 p.m. – Pereira 206

Dr. Stephanie E. August

Course Description

Objectives

The primary objective of this course is to introduce the fundamental concepts of artificial intelligence, and to provide experience in working with these concepts through assignments and/or programming exercises. Among the topics to be covered are: problem-solving methods, heuristic search, game playing, knowledge representation and symbolic reasoning, and various topics in machine learning, such as inductive learning algorithms, neural networks, and genetic algorithms. New directions in the field, including agent architectures, pervasive computation, and context-aware software are surveyed.

Required

Knowledge of a higher level programming language, such as C++, Prolog, or Lisp.

Expected Work

Readings prior to lectures.

Participation in class discussions and activities.

Written and oral homework assignments and programming assignments to reinforce lectures and readings.

Exams

One midterm and a final.

Text and Required Materials

Artificial Intelligence: A Modern Approach. Stuart J. Russell and Peter Norvig. 2nd Edition. Prentice-Hall, Englewood Cliffs, NJ, 2003.

Additional References

Artificial Intelligence. Patrick Henry Winston. 3rd edition. Addison-Wesley, Reading MA, 1992. (Winston)

Artificial Intelligence: Structures and Strategies for Complex Problem Solving. George F. Luger. 4th ed. Addison-Wesley, 2002.

Computation and Intelligence: Collected Readings. Edited by George F. Luger. MIT Press, 1995.

Concept Formation: Knowledge and Experience in Unsupervised Learning. Edited by Douglas H. Fisher, Jr., Michael J. Pazzani, and Pat Langley. Morgan Kaufmann Publishers, Inc., San Mateo CA, 1991.

The Elements of Artificial Intelligence. S.L. Tanimoto. Computer Science Press, New York NY, 1987.

Scripts, Plans, Goals, and Understanding: An Inquiry into Human Knowledge Structures. Roger Schank and Robert Abelson. Lawrence Erlbaum Associates, 1977. (SPGU)

Grading

Your final grade will be weighted as follows:

Projects.....	40%
Participation.....	20%
Midterm.....	15%
Final.....	25%

Projects will include written and oral assignments, lab exercises, and programming and research projects. Each project will be graded on a scale of 1 to 10. As time permits, project assignments will be reviewed in class on the due date.

Projects assignments are due at the beginning of class. Late assignments are not accepted, unless otherwise explicitly noted otherwise.

Students will participate in several group activities in the classroom over the course of the semester. Students will be graded both on the group product and on their individual contribution to the group effort. Students who miss these activities will receive no credit for the group product.

Answer homework problems with complete sentences. Reflect the question in the answer and show your reasoning. For example, if asked “What is the optimal path from Los Angeles to New York, using the graph in figure 4-1? What heuristic did you use?” your answer might be “Using the A* algorithm and Manhattan distance, the optimal path from Los Angeles to New York would travel through Portland OR, Pendleton OR, St. Louis MO, Chicago IL, Albany NY, for a total cost of 4,157 units. The completed search tree is shown below.” Include the search tree with your answer, as it clearly reflects the process you used to arrive at your answer.

Office Hours/Contact Points

Office Hours: Wednesday, 8:00 a.m. - noon, 5:20 - 6:20 p.m.
and *by appointment.*

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Internet: saugust@lmu.edu Put ***** CMSI AI Class ***** in the subject line!!!