

Covered on Midterm Exam Introduction to AI – CISC481/681 – Spring 2008

The following topics/readings will be covered on the midterm taking place on Tuesday, March 25, 2008. The readings are all from the course text, *Artificial Intelligence A Modern Approach, Second Edition*, by Stuart Russell and Peter Norvig.

- Chapter 1, pp. 1-29, Introduction, Foundations, History.
- Lisp will not be explicitly covered on the midterm.
- Chapter 2, pp. 32-54, Intelligent Agents and their structure, Nature of Environments.
- Chapter 3, pp. 59-87, Solving Problems by Searching (uninformed search algorithms).
 - Problem Solving Agent
 - State Space Problem Representation/Formulation (representing problems)
 - Simple Search Algorithms (handouts)
 - Simple Strategies
 - * Evaluating Strategies – completeness, time complexity, space complexity, optimality.
 - * Strategies Covered – breadth first, uniform cost search, depth first, depth limited search, iterative deepening, bidirectional.
 - We only very briefly touched on what the book calls searching with partial information (section 3.6). You are **not** responsible for Section 3.6 on this exam.
- Chapter 4, pp. 94-101, 105-119, Informed Search Methods (note we did **not** cover Recursive best-first search or Memory-bounded A* or Simplified-memory-bounded A* (p. 102-104), we did **not** cover Local Search in Continuous Spaces or Online Search Agents and Unknown Environments (pp. 119-129)).
 - Best First Search – Greedy
 - Algorithm A and A* – admissible heuristics, proof that Algorithm A* is admissible (handout)
 - Iterative Deepening A*
 - Characteristics of heuristic functions (especially with respect to Algorithm A) – we did **not** cover learning heuristics from experience.
 - Hill Climbing
 - Simulated Annealing
 - Local Beam Search
 - Genetic Algorithms
- Chapter 6, pp. 161-185, Adversarial Search (Game Playing).
 - Mini-max search
 - Alpha, Beta Pruning
 - Games that include an element of chance