

EXAM TOPICS
CSCI 580 – ARTIFICIAL INTELLIGENCE

Updated as of 12/03/07

Resources:

- S.Russell and P.Norvig, *Artificial Intelligence: A Modern Approach*. New Jersey: Prentice-Hall, 2nd edition.
[material covered from chapters 1-9,18,20,25,26]
- Fall'07 lecture coverage. See web pages & archives, from Vista course home page and....
<http://www.ecst.csuchico.edu/~renner/csci580>

Format:

There will be 5-7 Problem Sessions, each focusing on a skill-set (specific set of algorithms, techniques, or methods). These will mostly consist of work problems (graphs, trees, logic statements, etc.), with possibly some short answers/interpretations.

Topical Coverage:

- INTELLIGENT AGENTS – PAGE descriptors, agent architectures, environment properties. Problem session would likely focus on defining PAGE descriptors for a given problem/domain.
- Problem Solving via SEARCH methods – problem formulation, uninformed and informed (heuristic) searches, search strategy evaluation criteria, admissibility. Problem session would likely focus on Uniform Cost and/or A*.
- SOFT-COMPUTING techniques & Local Search Algorithms (these are the class of algorithms that are not guaranteed to converge)... Hill-climbing, simulated annealing, genetic algorithms.
- ARTIFICIAL NEURAL NETWORKS & LEARNING – perceptrons, backpropagation, ensembles, supervised learning, generalization, overfitting, linear separability, training, testing, validation, cross-validation, emergent properties, benefits and limitations.
- LOGICAL REASONING – (Prop.&FOL) syntax, semantics, tautologies, rules of inference, truth-tables, models, validity & satisfiability, inferencing, forward/backward chaining, quantifiers & duality, substitution, unification, resolution.

- LISP – level-2 coding skills in LISP (list processing, recursion, creating, manipulating, and navigating trees).
- ROBOTICS – general understanding of terminology (sensors, effectors, microcontroller, perception: localization & mapping), problems and limitations.
- PHILOSOPHICAL/FUTURE of AI issues – general understanding of terminology (StrongAI / WeakAI, consciousness/phenomenology/intentionality/qualia), familiarity with some of the arguments and thought experiments against AI, awareness of some of the risks and ethical issues (see p.960-).