CSC384 -- Introduction to Artificial Intelligence
Winter 2020

Lectures

The course material will be covered primarily in lectures and tutorials. Some examples will be done in class only, and will not appear in these notes. It is your responsibility to take notes in class to augment these slides with the extra pertinent information presented during class.

The recommended text book also contains material that will help clarify the topics covered in the lectures.

Topic	Readings Russell and Norvig (R&N)	Slides	Notes
Term Specific Information Introduction What is AI?	Chapter 1 presents a more complete and very interesting overview of the history and goals of AI research. Chapter 2 gives more detail about viewing AI systems as agents interacting with various environments.	Introduction (1pp) Introduction (4pp)	A lovely NYT article that contrasts Deep Blue's style of game play to that of Alpha Go and that, unfortunately, may be behind a paywall for some. Gary Kasparov's take on recent advances in

			gaming is also worth a read and can be found here: [Sheila McIlraith weighs in](#) on Watson's handling of the Toronto question.
Uninformed and Heuristic Search	Chapter 3 presents the search techniques covered in the lectures (in a somewhat different way) Chapter 4 can be read for enrichment.	[Uninformed Search (1pp)](#) (revised 1/15) [Uninformed Search (4pp)](#) (revised 1/15) [Heuristic Search, Part 1 (1pp)](#) (revised 1/19) [Heuristic Search, Part 1 (4pp)](#) (revised 1/19) [Heuristic Search, Part 2 (1pp)](#) [Heuristic Search, Part 2 (4pp)](#)	A more detailed analysis of the state space of sliding tile puzzles [can be found here](#). [Some practice problems](#) (revised 1/13)
Backtracking Search (CSPs)	Chapter 6.1, 6.2, 6.3	[Backtracking Search - Part 1 (Annotated)](#) [Backtracking Search - Part 2 (Annotated)](#) [Backtracking Search - Part 3 (Annotated, updated 2/6)](#)	[Andrew Moore's CSP animations](#) [Alan Mackworth's lecture on GAC](#). [CSP Tutorial Examples](#) [CSP Tutorial Examples - Solutions](#)
Game Tree Search	Chapter 5.1, 5.2, 5.3 (R&N,3rd ed) Chapter 5.7 also makes for interesting reading.	[Game Tree Search - Part 1 (Annotated)](#) [Game Tree Search - Part 2 (Annotated, updated 2/29)](#)	[Excellent Alpha-Beta Tutorial, thanks to Peter Abbeel](#) [Alpha-Beta Simulator](#) [Alpha Beta Pruning - Examples](#) [Alpha Beta Pruning - Solution to Example 1](#)

Knowledge Representation and Reasoning	Chapter 7-9 and 12 (R&N 3rd ed) Chapter 7-10 (R&N 2nd ed)	KRR - Part 1 (Annotated) KRR - Part 2 (Annotated, updated 3/11)	Gordon Novak has some good **KR Problem Sets** on his web page: • Hints on how to convert ``English to Logic''* (Novak calls these *Story Problems*) • English-to-Logic Problems and solutions to selected problems. • A readable version of the above • Unification Problems and solutions
Representing and Reasoning under Uncertainty	Chapter 13 and 14.	Probability Review (1pp) Probability Review (4pp) (Updated 3/17) Bayesian Networks, Continued (1pp) Bayesian Networks, Continued (4pp) (Updated 3/17) Reasoning over Time (Hidden Markov Modelss) (1pp) Reasoning over Time (Hidden Markov Modelss) (4pp) Intro to Bias in Classification (1pp) Intro to Bias in Classification (4pp)	A couple of probability review problems. VE problem A couple more BN problems VE and D-Separation problems (solution) HMM problem (solution) Additional notes on sampling from BNs (Note that sampling is NOT covered on the take home final)