ITCS 3153 – Intro to Artificial Intelligence

Final Exam Study Guide

1. Know the agent /environment interaction image.
2. What is a Performance measure its impact on decision making.
3. Uniformed Search:
   1. Know what the solution for an uninformed search is called (path).
4. Informed Search:
   1. Know that greedy searches always expand the node with the lowest heuristic cost
5. Local search
   1. Know what the global extrema point is
   2. Know what an optimal local search is (always finds the global extrema point)
6. A\* Search
   1. Know the basic formula (f = g + h)
   2. Know what the openList and closedList are used for (what they hold)
   3. Know how the Manhattan method is used to calculate the heuristic.
   4. Know how the path is generated once the goal is reached.
   5. Know how an optimal path is defined (path with the smallest possible path cost)
7. Be able to explain how agents use the Minimax algorithm to make decision in an adversarial environment.
8. Be able to explain the characteristics of Knowledge-based agents, and how their knowledge base plays a role in how they make decisions.
9. Bayesian Networks
   1. Know what probability distributions that incorporate evidence are called (posterior distribution)
   2. Know how many cycles exist in a Bayesian network (n=0).
   3. Know what kind of distribution probabilistic inference computes (posterior distribution)
   4. Basic structure of a Bayesian network (directed graph)
10. Inference over time
    1. Know what type of variable can be modeled with a Hidden Markov Model (Discrete).
11. Quantifying uncertainty
    1. Be able to list and define the three reason that using logic fails when attempting to define complex domains
    2. Be able to explain the basic axioms of probably theory (the complex-looking formula thing that says each possible world has probability between 0 and 1 and the sum of them is 1.)
    3. Decision theory = probability theory + utility theory
12. Be able to determine the probability of an event given a joint probability distribution