CSCE476/876 **Spring 2004**

Homework 4

Assigned on: Monday February 23, 2004.

Due: Monday, March 1^{st}, 2004.
All exercices are pen and paper except for the programming part (i.e., AIMA Exercise 3.9, question b), which must be submitted with `handin`.

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1 AIMA, Exercise 2.2, Page 56. (5 points)

Both the performance measure and the utility function measure how well an agent is doing. Explain the difference between the two.

2 AIMA, Exercise 2.5 (a,b,c), Page 57. (10 Points)

For each of the agent types listed below, characterize its performance measure, environment, actuators and sensors according to the properties given in Section 2.3:

- Robot soccer player
- Internet book-shopping agent
- Autonomous Mars rover

3 AIMA, Exercise 3.9, Page 90. (52 points)

- Question a: 10 points
- Question b: 40 points. You need to implement your algorithm in Common Lisp.
- Question c: 2 points

4 AIMA, Exercise 3.18, Page 93. (5 points)

5 Evaluation function (Total 8 points)

Adapted from AIMA, Edition 1.

With $g(n)$ being the path length,

1. Suppose that we run a greedy search algorithm with $h(n) = -g(n)$. What sort of search will the greedy search emulate?
   Explain. *(4 points)*
2. Suppose that we run a search algorithm with $h(n) = g(n)$. What sort of search will the greedy search emulate?
   Explain. *(4 points)*

6 AIMA, Exercise 4.1, Page 134. (10 points)

7 AIMA, Exercise 4.3, Page 134. (10 points)