Introduction to Multi-Agent-Programming

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Exercise Sheet 4

Due: November 23th, 2009

Exercise 4.1 (A* (2 Points; programming))

(a) Define a reasonable cost-function for path planning in the rescue simulation system and document it. Implement uniform cost search as a path planning implementation. (1)

(b) Define an admissable heuristic for your cost function and show, why it is admissable. Implement A* search based on uniform cost search. (1)

The written parts can be given as code comments.

Exercise 4.2 (Algorithm Evaluation (1 Point; programming))

Evaluate the path planning algorithms by implementing them into simple agents. The agents should be ambulance team agents that implement the following simple behaviour:

(a) If they do not have a goal: Choose a random node in the map.

(b) Plan to the current goal and drive there using A*.

(c) If the goal is reached, choose a new random node.

In the planning step use breadthFirstSearch from the sample package, your implementation of uniform cost search and your implementation of A*. Measure the time and output total average over all planning queries for each algorithm. Use the "no earthquake" scenario for evaluation.

This exercise should be submitted to your group directory on augusta until Monday (Nov. 23th)