AI Lab 2

Karl-Johan Djervbrant

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Task 1 Path Planning

1.1 a) Unified Search Algorithms

In this task we were supposed to implement three different types of search algorithms.

1. Random Agent
2. Breadth First Agent
3. Depth First Agent

The random agent works by simply adding a random weight to the node between 1 and 10, then sort the list of all nodes by the weight and remove the first node in the list.
Breadth First and Depth first are very similar in how they are implemented, it's simply a difference in how one removes a node from the list. In Depth first, the last element in the list is removed first whereas in Breadth first you remove the first element.

1.1.1 Performance

On a set of 100 runs on a 100 by 100 map, this is the mean for each algorithm.

Mean of 100 runs	Breadth First Search	Depth First Search	Random Search
nodes	4725.61	5857.09	5445.28
pathLength	144.84	4413.16	292.60

Out of the three Unified Search Algorithms we can se that out of 100 runs, the Breadth First Search algorithm performs best, though none of the algorithms are particularly good when it come to the amount of expanded nodes.

1.2 a) Informed Search Algorithms

1.3 b) USA vs ISA on map with obstacle

1.4 b) A* with heuristic

1.5 What I learned in Task 1

Task 2 Poker Bidding

2.1 a) Random Agent

Random Search	
stack	306.50
nNodes	9102.80
depth	13.24
nHands	7.22
opponentStack	293.50

2.2 b) Breadth First Search Agent

Breadth First Search	
stack	400.30
nNodes	135871.28
depth	10.36
nHands	2.30
opponentStack	199.70

2.3 c) Greedy Agent

Greedy Search	
stack	402.10
nNodes	4209.28
depth	10.64
nHands	2.10
opponentStack	197.90

2.4 What I learned in Task 2