Artificial Intelligence 1st Exam 9th February 2018

11. Februar 2018

Problem 1 : Short Questions

a) If h is not admissible, what does is mean for A*?

b) What does it mean if A and B are independant given C?

c) The negation of a satisfiable sentence is satisfiable. Is this true?

d) When do decision lists perform worse than decision trees?

e) When is a POP complete?

Problem 2: A*

a) Make an A* search, give f for each node and mark which get expanded (Like in the other exams).

b) Is the heuristic admissible?

Problem 3: Min-Max

a) Do Min-Max algorithm and give the edge which will be taken.

b) Do alpha-beta-pruning and give the edge which will be taken which nodes get pruned, and the final alpha and beta values for each node.

Problem 4 : Resolution

a) Prove a statement using resolution.

b) Give a counter-example to a wrong statement.

Problem 5: Decision Trees and Learning

a) Make a decision tree using information theory (Similar to the one in the assignments and 2008 exam).

b) Give weights for a FFN to represent the function given by the decision tree

Problem 6 : Belief-Networks

a) D-Seperation

b) D-Seperation

c) D-Seperation

d) Calculate probability

Problem 7 : Robot

a) Robot is unsure of its position and if he moves on either position the probability that he moves forward is $\frac{3}{4}$. Calculate the probabilities (I'm not sure what exactly was asked).

b) Robot has a lasor sensor, it is unsure of it's position, and probabilities for some positions are given. Calculate the probabilities (I'm not sure what exactly was asked).