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Cs 384 AI

HW #1

Question 2

* 1. you can define states by Belief States. This is a set of states which represents the agents current belief about the possible physical states it might be in at an unobservable environment.
  2. The initial state: Ꝋ = (M,C,B) = (4,4,1). M = Missionaries, C = Cannibals, and B = boat, all on the west bank.
  3. Goal State = (0,0,0)
  4. Possible actions:

1 C/M L🡪R: - (0,1,1) or (1,0,1);

2 C/M L🡪R: - (0,2,1) or (2,0,1);

3 C/M L🡪R: - (0,3,1) or (3,0,1);

1 C/M R🡪L: + (1,0,1) or (0,1,1);

2 C/M R🡪L: + (2,0,1) or (0,2,1);

3 C/M R🡪L: + (3,0,1) or (0,3,1);

1 C & 1M L🡪R: +- (1,1,1);

2 C & 1M L🡪R: +- (1,2,1);

1 C & 2M L🡪R: +- (2,1,1);

1 C & 1M R🡪L: +- (1,1,1);

2 C & 1M R🡪L: +- (1,2,1);

1 C & 2M R🡪L: +- (2,1,1);

* 1. Graph included at the end.
  2. Every person on the boat when crossing is a step/path cost of 1
  3. h1(n) = (NumOfPeopleOnInitialSide)-1
  4. if we do not take in the possibility of the cannibals eating the missionaries, the boat can take 3 people, but after each trip across, one person has to paddle back. This is admissible since all boat trips but the last one can result in a net transfer of at most one person to the destination side.
  5. Source code attached
  6. A close up of a logo

     Description generated with high confidenceH2
     1. H2(n) = (NumOfPeopleOnInitialSide)/BoatCapacity
     2. A close up of a logo

        Description generated with very high confidence

v. the performance of H2 is quicker because It cycles through the nodes in a more efficient manner.