COMP 569 - Artificial Intelligence
Fall 2016
Assignment 1
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GitHub Link: https://github.com/CEP2/comp569_a1

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1. Paper Commentary

    Having not read the paper prior to this class, it was more interesting of a read than I thought it was going to be.The structure of the paper presented the imitation game and its varying levels of application to computers is what garnered my attention since I was expecting more of a wall of text mundanely explaining certain concepts. It was a little long-winded in terms of getting through each level of how the game was constructed, but the secondary piece to his paper that pretty much was directed at arguments against the possibility of some form of consciousness, intelligence or self-learning from a machine kept me reading. What stood out the most in the rebuttal portion of the paper was that many of the arguments fell in line with what could easily be assumed to be present-day ones if presented in a slightly different context.

    Harnad's paper, in similar fashion to Turing's rebuttal section, had a format that kept me easily engaged with his points seeming to be much more concise for the parts aht I do remember. It might just be personal preference on my end, however, his deconstruction and criticism on Turing's framing of calling the experiment a 'game' stood out in a slightly negative way to me. I don't remember Turing's paper word-for-word -- and by the time I had gotten around to Harnad's paper it had been a while since I read through Turing's -- but Harnad prodded needles into the fact that any sort of machine designed to take part in the game would have needed to be designed to do so. This prodding seemed to be a little strange in the sense that Turing appeared to be aware of the limitations of any machine that could be made would have to reach quite far in order to come close to mimicking human interaction; he seemed to be curious to see if there was any baseline that machines could reach to disguise themselves as humans.The rest of Harnad's deconstructions seemed to sit well with me, but what stood out in a more positive light was the comment on thinking being unobservable and our innate potential to project the believe that thought can be possible since a computer's innerworkings are hidden to us and unobservable as well.

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2. Missionaries and Cannibals

Red = Invalid State
Orange = Loops backwards
-- Type = Invalid Move, Missing Type (i.e.: -- M = Missing one Missionary.)
Bold = Evaluated
Green = Goal

		Commands & Resulting States				
	State (Prev) Row	M	C	MM	CC	MC
1	**3 3 L**	**2 3 R**	**3 2 R → 2**	**1 3 R**	**3 1 R → 3**	**2 2 R → 4**
2	**3 2 R (3 3 L) 1**	**-- M**	**3 3 L**	**-- MM**	**-- CC**	**-- M**
3	**3 1 R (3 3 L) 1**	**-- M**	**3 2 L → 5**	**-- MM**	**3 3 L**	**-- M**
4	**2 2 R (3 3 L) 1**	**3 2 L → 5**	**2 3 L**	**-- M**	**-- C**	**3 3 L**
5	**3 2 L (3 1 R) 3**	**2 2 R → 4**	**3 1 R**	**1 2 R**	**3 0 R → 7**	**2 1 R**
6	3 2 L (2 2 R) 4	See Row 5				
7	**3 0 R (3 2 L) 5**	**-- M**	**3 1 L → 8**	**-- MM**	**3 2 L**	**-- M**
8	**3 1 L (3 0 R) 7**	**2 1 R**	**3 0 R**	**1 1 R → 9**	**-- C**	**2 0 R**
9	**1 1 R (3 1 L) 8**	**2 1 L**	**1 2 L**	**-- M**	**-- C**	**2 2 L → 10**
10	**2 2 L (1 1 R) 9**	**1 2 R**	**2 1 R**	**0 2 R → 11**	**2 0 R**	**1 1 R**
11	**0 2 R (2 2 L) 10**	**1 2 L**	**0 3 L → 12**	**2 2 L**	**-- C**	**1 3 L**
12	**0 3 L (0 2 R) 11**	**-- M**	**0 2 R**	**-- MM**	**0 1 R → 13**	**-- M**
13	**0 1 R (0 3 L) 12**	**1 1 L → 14**	**0 2 L → 15**	**2 1 L**	**0 3 L**	**1 2 L**
14	**1 1 L (0 1 R)**	**0 1 R**	**1 0 R**	**-- M**	**-- C**	**0 0 R → 16**
15	**0 2 L (0 1 R)**	**-- M**	**0 1 R**	**-- MM**	**0 0 R → 16**	**-- M**
16	**0 0 R - Goal**	**-**	**-**	**-**	**-**	**-**

3. Solving Missionaries & Cannibals
   NOTE: The following charts will reference the table above with regards to states for queues and frontier.
   + **RED** & **ORANGE** nodes will be deemed unfit to pursue due to requirements of the problem.

   a. DFS
      NOTE: Stack has leftmost option investigated first in regards to chart above.

State	Stack	New Additions	Notes
1	2 3 4	2 3 4	
2	3 4	-	
3	5 4	5	
5	7 4	7	(4 exists)
7	8 4	8	
8	9 4	9	
9	10 4	10	
10	11 4	11	
11	12 4	12	
12	13 4	13	
13	14 15 4	14 15	
14	16 15 4	16	
16	15 4	-	FINISH

(BFS on next page)

b. BFS

State	Queue	New Additions	Notes
1	2 3 4	2 3 4	
2	3 4	-	
3	4 5	5	
4	5	-	
5	4 7	4 7	
4	7	7	(5 was previous state)
7	8	8	
8	9		
9	10	10	
10	11	11	
11	12	12	
12	13	13	
13	14 15	14 15	
14	15 16	16	
15	16 16	16	
16	16	-	FINISH