dancejic_A3_Report.pdf

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Assignment 3 Report -- Heuristic Search

CSE 415: Introduction to Artificial Intelligence
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1. Heuristics for the Eight Puzzle

Puzzle	Heuristic	Solved	#Solution Edges	Solution Cost	# Expanded	Max OPEN
A	None (UCS)	Y	7	7	166	101
A	Hamming	Y	7	7	7	6
A	Manhattan	Y	7	7	7	6
B	None (UCS)	Y	12	12	1490	898
B	Hamming	Y	12	12	94	72
B	Manhattan	Y	12	12	33	25
C	None (UCS)	Y	14	14	4070	2290
C	Hamming	Y	14	14	189	127
C	Manhattan	Y	14	14	56	39
D	None (UCS)	Y	16	16	7982	4700
D	Hamming	Y	16	16	589	368
D	Manhattan	Y	16	16	148	96

Puzzle A: [3,0,1,6,4,2,7,8,5]
Puzzle B: [3,1,2,6,8,7,5,4,0]
Puzzle C: [4,5,0,1,2,8,3,7,6]
Puzzle D: [0,8,2,1,7,4,3,6,5]

2. (Optional) Evaluating My Custom Heuristics

a) My Heuristic works by counting the amount of tiles on the opposite side of the cube that are not the opposite of the current color. The idea is that the more solved a Rubik's cube is, the more two opposite sides have two opposite colors.
b) It doesn't seem to outperform the other Heuristic. I think this is because it basically calculates the same values
c) There has to be a more effective heuristic, something more complicated than 2-3 steps becomes very long to compute