Heuristic Analysis

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Abstract

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1 Choice of Algorithm

2 Data

Zero value data points indicate that a 10 minute timeout was reached.

Goal Tests

	Problem 1	Problem 2	Problem 3

BreadthFirstSearch: 56, 4,609, 18,098

BreadthFirstTreeSearch: 1,459, 0, 0

DepthFirstGraphSearch: 22, 625, 409

DepthLimitedSearch: 271, 0, 0

UniformCostSearch: 57, 4,855, 18,225

RecursiveBestFirstSearchH1: 4,230, 0, 0

GreedyBestFirstGraphSearchH1: 9, 1,000, 5,580

AstarSearchH1: 57, 4,855, 18,225

AstarSearchHIgnorePreconditions: 47, 3,691, 14,721

HPgLevelsum: 13, 88, 0

2

New Nodes

Problem 1
Problem 2
Problem 3

$\cdot 10^5$

| | BreadthFirstSearch | BreadthFirstTreeSearch | DepthFirstGraphSearch | DepthLimitedSearch | UniformCostSearch | RecursiveBestFirstSearchH1 | GreedyBestFirstGraphSearchH1 | AstarSearchH1 | AstarSearchHIgnorePreconditions | HPgLevelsum |

BreadthFirstSearch: 180 / 30,509 / $1.3 \cdot 10^5$
BreadthFirstTreeSearch: 5,960 / 0 / 0
DepthFirstGraphSearch: 84 / 5,602 / 3,364
DepthLimitedSearch: 414 / 0 / 0
UniformCostSearch: 224 / 44,041 / $1.6 \cdot 10^5$
RecursiveBestFirstSearchH1: 17,023 / 0 / 0
GreedyBestFirstGraphSearchH1: 28 / 8,982 / 49,150
AstarSearchH1: 224 / 44,041 / $1.6 \cdot 10^5$
AstarSearchHIgnorePreconditions: 188 / 33,669 / $1.3 \cdot 10^5$
HPgLevelsum: 50 / 841 / 0

Path Length

Time Elapsed

Legend: Problem 1, Problem 2, Problem 3

Method	Problem 1	Problem 2	Problem 3
BreadthFirstSearch	$2.94 \cdot 10^{-2}$	14.39	103.03
BreadthFirstTreeSearch	0.91	0	0
DepthFirstGraphSearch	$1.33 \cdot 10^{-2}$	3.52	1.74
DepthLimitedSearch	$9.73 \cdot 10^{-2}$	0	0
UniformCostSearch	$4.03 \cdot 10^{-2}$	45.29	359.89
RecursiveBestFirstSearchH1	2.74	0	0
GreedyBestFirstGraphSearchH1	$4.89 \cdot 10^{-3}$	7.38	95.51
AstarSearchH1	$3.75 \cdot 10^{-2}$	45.78	356.34
AstarSearchHIgnorePreconditions	$4.79 \cdot 10^{-2}$	40.5	336.01
HPgLevelsum	1.66	177.21	0