

Questions

Which algorithm or algorithms would be most appropriate for planning in a very restricted domain (i.e., one that has only a few actions) and needs to operate in real time?

greedy_best_first_graph_search h_unmet_goals

Which algorithm or algorithms would be most appropriate for planning in very large domains (e.g., planning delivery routes for all UPS drivers in the U.S. on a given day)

greedy_best_first_graph_search h_unmet_goals

Which algorithm or algorithms would be most appropriate for planning problems where it is important to find only optimal plans?

For restricted domains, I would not use depth_first_graph_search. The other algorithms all seem to have different strengths so I would choose one based on what metric was important to me.

For large domains, I would use astar_search h_unmet_goals.

Air Cargo Test Problems

| Air Cargo Problem 1 | | | | | | |
|--|-----------|------------|------------|-----------|-------------|-------------|
| | # Actions | Expansions | Goal Tests | New Nodes | Time | Plan length |
| breadth_first_search | 20 | 43 | 56 | 178 | 0.004425517 | 6 |
| depth_first_graph_search | 20 | 21 | 22 | 84 | 0.002810969 | 20 |
| uniform_cost_search | 20 | 60 | 62 | 240 | 0.009206513 | 6 |
| greedy_best_first_graph_search h_unmet_goals | 20 | 7 | 9 | 29 | 0.001263654 | 6 |
| greedy_best_first_graph_search h_pg_levelsum | 20 | 6 | 8 | 28 | 0.251574422 | 6 |
| greedy_best_first_graph_search h_pg_maxlevel | 20 | 6 | 8 | 24 | 0.188282471 | 6 |
| greedy_best_first_graph_search h_pg_setlevel | 20 | 6 | 8 | 28 | 0.324637618 | 6 |
| astar_search h_unmet_goals | 20 | 50 | 52 | 206 | 0.007290587 | 6 |
| astar_search h_pg_levelsum | 20 | 28 | 30 | 122 | 0.598175485 | 6 |
| astar_search h_pg_maxlevel | 20 | 43 | 45 | 180 | 0.661728302 | 6 |
| astar_search h_pg_setlevel | 20 | 33 | 35 | 138 | 0.718829199 | 6 |
| Air Cargo Problem 2 | | | | | | |
| | # Actions | Expansions | Goal Tests | New Nodes | Time | Plan length |
| breadth_first_search | 72 | 3343 | 4609 | 30503 | 1.396721271 | 9 |
| depth_first_graph_search | 72 | 624 | 625 | 5602 | 2.194277348 | 619 |
| uniform_cost_search | 72 | 5154 | 5156 | 46618 | 2.723929278 | 9 |
| greedy_best_first_graph_search h_unmet_goals | 72 | 17 | 19 | 170 | 0.013032127 | 9 |
| greedy_best_first_graph_search h_pg_levelsum | 72 | 9 | 11 | 86 | 6.003312876 | 9 |
| greedy_best_first_graph_search h_pg_maxlevel | 72 | 27 | 29 | 249 | 11.24422633 | 9 |
| greedy_best_first_graph_search h_pg_setlevel | 72 | 9 | 11 | 84 | 7.538850466 | 9 |
| astar_search h_unmet_goals | 72 | 2467 | 2469 | 22522 | 1.754493083 | 9 |
| astar_search h_pg_levelsum | 72 | 357 | 359 | 3426 | 140.3935985 | 9 |
| astar_search h_pg_maxlevel | 72 | 2887 | 2889 | 26594 | 767.1742883 | 9 |
| astar_search h_pg_setlevel | 72 | 1037 | 1039 | 9605 | 683.1555048 | 9 |

