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1. **Greedy best-first search**

Complete?No

Time:O(bm)m: là độ sâu

Space:O(bm)m: là độ sâu

Optimal?No

1. **A\* search**

Complete?Yes

Time:Exponential

Space:Keeps all nodes in memory, so also exponential

Optimal?Yes

**3)Admissible heauristics**

Theorem: if h(n) is admissible. A\* using Tree-Search is optimal

Proof:

Suppose a suboptimal goal node G2 appears on the fringe and let

the cost of the optimal solution be C\*. Prove that f(G2),C\*

Consider a fringe node n that is on an optimal solution path. Prove

that f(n),C\*

So, G2 will not be expanded and A\* must return an optimal solution.

* A heuristic h(n) is admissible if for every node n, h(n) ≤ h\*(n), where h\*(n) is the true cost to reach the goal state from n.
* An admissible heuristic never overestimates the cost to reach the goal, i.e., it is optimistic
* Example: h­SLD(n) (never overestimates the actual road distance)

1. **Consistent heuristics**

Theorem: If h(n) is consistent. A\* using Graph-Search is optimal.

Proof:

* A heuristic is consistent if for every node n, every successor n' of n generated by any action a,

h(n) ≤ c(n,a,n') + h(n')

* If h is consistent, we have

f(n’) = g(n’) + h(n’) (by def.)

= g(n) + c(n,a,n') + h(n’) (g(n’)=g(n)+c(n.a.n’))

≥ g(n) + h(n) = f(n) (consistency)