

Planning Study Guide

Artificial Intelligence

1 Symbolic Planning

1. What is the closed world assumption?

Solution: Any fluents not mentioned are false.

2. What are the two main limitations of atomic state-space search for planning?

Solution: Requires ad-hoc heuristics and explicit representation of exponentially large state space.

3. How does Planning Domain Definition Language (PDDL) planning address the limitations of atomic state-space search?

Solution: Planning Domain Definition Language addresses the limitations of atomic state-space search by using a factored representation based on first-order logic.

4. Is $At(Truck_1, Melbourne)$ a ground atomic fluent? Why, or why not?

Solution: Yes, because At is a single predicate and $Truck_1$ and $Melbourne$ are not variables.

5. Is $At(t_1, from)$ a ground atomic fluent? Why, or why not?

Solution: No, because $from$ is a variable. (t_1 could also be considered a variable.)

6. Assuming the following action schema:

$Action(Fly(p, from, to),$

$PRECOND : At(p, from) \wedge Plane(p) \wedge Airport(from) \wedge Airport(to)$

$EFFECT : \neg At(p, from) \wedge At(p, to)$

after $Fly(P_1, SFO, JFK)$, what is true about P_1 ?

Solution: $At(P_1, JFK)$