

### **Lecture #3: State Space Planning**

How can functional symbols be used in classical planning? Hint: can a new object be introduced by a classical plan?

Prove that finding a plan of a given length is a decidable problem.

Assume that we have a domain model, where operators have no negative preconditions and no negative effects. Describe a method to find out if a planning problem has a solution.

Discuss appropriateness of various search techniques for forward planning.

What is the advantage of backward planning over forward planning?

What are the conditions necessary for applicability of backward search? Why can we do backward planning? Hint: think about solving N-queens problem using backward search.

Is it possible to obtain unreachable goal during backward planning?

Is it possible to obtain unreachable state using forward planning?

How to check loops during backward planning? And what about for the lifted version of the algorithm?

What is lifting? What is grounding?

What is motivation for using lifting?

What is the difference between the STRIPS algorithm and backward planning?

Describe Sussman anomaly.

Describe how to encode domain knowledge for the blockworld problem as heuristic for the forward planner.