Principles of AI Planning

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Exercise Sheet 14
Due: No submission – no grading – optional exercises

Exercise 14.1 (SAT planning)

In this exercise, consider a different notion of a plan. Whereas we considered the notion of *linear* plans in the lecture, in this exercise, we consider a type of *cyclic* plans that ensure that a goal state is visited infinitely often.

Such a cyclic plan is a tuple (π_1, π_2) consisting of two linear plans π_1 and π_2, such that (a) π_1 is applicable in the initial state s_0 and leads to some state s_1 with the property that (b) π_2 is applicable in that state s_1 and again results in s_1, and (c) the goal condition γ is satisfied in some state s_2 that is visited while π_2 is applied.

How do we have to alter the first propositional encoding shown in the lecture (Kautz & Selman) such that it will find such cyclic plans?

Exercise 14.2 (Planning literature)

As part of your work on exercise sheet 1, you read the paper titled "Everything You Always Wanted to Know About Planning (But Were Afraid to Ask)" by Jörg Hoffmann, published at the annual German Conference on Artificial Intelligence (KI) in 2011.

Back then, you were asked to write, as an answer to the exercise, two questions that came to your mind when reading the paper and that you would like to discuss in the exercise group.

Re-read the paper (however cursorily) and compare your impression of it you had three to four months ago and now. Does the paper give you a good overview of what material we discussed in class?

The paper can be found here: `http://fai.cs.uni-saarland.de/hoffmann/papers/ki11.pdf`