

Research Review: AI Planning and Search

STRIPS (Stanford Research Institute Problem Solver) is an automated planner, base for most of the languages for expressing automated planning problem instances in use today, like ADL or PDDL.

With STRIPS, you first describe the world and then provide a problem set, consisting of an initial state and a goal condition. STRIPS can then search all possible states, executing various actions, until it reaches the goal.

Graphplan is an algorithm for automated planning which takes as input a planning problem expressed in STRIPS and produces, if one is possible, a sequence of operations for reaching a goal state.

Graphplan uses a planning graph to reduce the amount of search needed to find the solution from straightforward exploration of the state space graph, which makes it order of magnitude faster than its predecessors do. Besides, planning graphs also proved useful for deriving accurate heuristics to guide search.

The Planning Domain Definition Language (PDDL) is an attempt to standardize Artificial Intelligence planning languages. PDDL has been the standard language for the International Planning Competition since 1998. It was inspired, among others, by STRIPS and ADL. Several extensions have been implemented over the years being the version 3.1 the latest one.

References:

1. <https://en.wikipedia.org/wiki/STRIPS>
2. <http://www.primaryobjects.com/2015/11/06/artificial-intelligence-planning-with-strips-a-gentle-introduction/>
3. <https://en.wikipedia.org/wiki/Graphplan>
4. Avrim L. Blum, Merrick L. Furst, "[Fast Planning Through Planning Graph Analysis](#)"
5. https://en.wikipedia.org/wiki/Planning_Domain_Definition_Language
6. <http://icaps-conference.org/ipc2008/deterministic/data/mcdermott-et-al-tr-1998.pdf>
7. <https://www.cs.cmu.edu/afs/cs/project/jair/pub/volume20/fox03a-html/node2.html>