Research Review

STRIPS

In artificial intelligence, **STRIPS** (Stanford Research Institute Problem Solver) is an automated planner developed by **Richard Fikes** and **Nils Nilsson** in 1971 at SRI International.The same name was later used to refer to the formal language of the inputs to this planner. This language is the base for most of the languages for expressing automated planning problem instances in use today; such languages are commonly known as action languages.STRIPS is an automated planning technique that works by executing a domain and problem to find a goal. With STRIPS, you first describe the world by providing objects, actions, preconditions, and effect(all members and actions of game world).Once the world is described, you then provide a problem set. A problem consists of an initial state and a goal condition. STRIPS can then search all possible states, starting from the initial one, executing various actions, until it reaches the goal. A common language for writing STRIPS domain and problem sets is the Planning Domain Definition Language (PDDL). PDDL lets you write most of the code with English words, so that it can be clearly read and (hopefully) well understood. It's a relatively easy approach to writing simple AI planning problems.

With STRIPS AI planning, a graph can be constructed that contains all available states and the actions that bring you to each state. This is called a planning graph.

SATPLAN

Satplan (better known as Planning as Satisfiability) is a method for automated planning. It converts the planning problem instance into an instance of the Boolean satisfiability problem, which is then solved using a method for establishing satisfiability such as the DPLL algorithm or WalkSAT.

Given a problem instance in planning, with a given initial state, a given set of actions, a goal, and a horizon length, a formula is generated so that the formula is satisfiable if and only if there is a plan with the given horizon length. This is similar to simulation of Turing machines with the satisfiability problem in the proof of Cook's theorem. A plan can be found by testing the satisfiability of the formulas for different horizon lengths. The simplest way of doing this is to go through horizon lengths sequentially, 0, 1, 2, and so on.

GRAPHPLAN

Graphplan is a general-purpose planner for STRIPS-style domains, based on ideas used in graph algorithms. Given a problem statement, Graphplan explicitly constructs and annotates a compact structure called a Planning Graph, in which a plan is a kind of "flow" of truth-values through the graph. This graph has the property that useful information for constraining search can quickly be propagated through the graph as it is being built. Graphplan then exploits this information in the search for a plan. Graphplan was created by **Avrim Blum** and **Merrick Furst**, with subsequent extensions and improvements made by many researchers at many different institutions around the world. The name graphplan is due to the use of a novel planning graph, to reduce the amount of search needed to find the solution from straightforward exploration of the state space graph.

References

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