Planning is a sub-field of Artificial Intelligence. In this, Agents can take advantage of the structure of a problem to construct complex plan of actions to achieve some goal. A planning problem consists of initial states, collection of actions each having preconditions, and goals.

Planning Languages/ Frameworks

STRIPS is an action language which was a part of the first major planning system with the same name. Stanford Research Institute (SRI) Scientists developed the first AI robot called "Shakey" in 1966. The researchers at SRI took inspiration from general problem solving and theorem proving, and called the resulting algorithm "STRIPS". STRIPS as a classical planning language is composed from states, goals and set of actions:
Action Description Language or ADL was introduced as advancement of STRIPS in 1987 by Pednault. It is an automated planning and scheduling system in particular for robots. It relaxed some of the STRIP restrictions and made it possible to encode more realistic problems.
PDDL or Planning Domain Definition Language was introduced as an attempt to standardize Artificial Intelligence planning languages in 1998. It was inspired by STRIPS and ADL.

Planning Approaches

Graph Plan

Building a planning graph was popular during 1995-2000. Graphplan searches for a plan in two stages. The first stage is the construction of a data structure, the *plan graph*, that efficiently represents information about what the executive could possibly achieve by executing actions from the initial state. The second stage searches, backwards from the goals, for a sub- structure within the plan graph that represents a subset of actions that will actually achieve the goals.

SATPlan

SATPlans (or Satisfiable Plan) were introduced in 1992 in a paper by Kautz and Selman. Kautz and Selman built a system that outperformed Game Plan and made SAT popular. There are multiple variants of SAT exist today. The SATPlan compiles a planning problem into logically satisfiability problem. 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 satisfied if and only if there is a plan with the given horizon length.

Heuristic Search based Plans

The idea behind this work is to use a classic heuristic guided search. This is the search strategy in which the choice between alternatives is made by evaluating each alternative using a heuristic evaluation function and then selecting the best valued option. Some popular heuristics are critical path heuristics, ignoring deleted list, relaxed plan, landmark etc.

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