

A short review of AI planning historically

Shakey¹ was the first mobile robot with the ability to perceive and reason about its surroundings.

The subject of SRI's Artificial Intelligence Center research from 1966 to 1972, Shakey could perform tasks that required planning, route-finding, and the rearranging of simple objects. The robot greatly influenced modern robotics and AI techniques; today, it resides in the Computer History Museum.

Due to its nature, the project combined research in robotics, computer vision, and natural language processing. Because of this, it was the first project that melded logical reasoning and physical action. Shakey was developed at the Artificial Intelligence Center of Stanford Research Institute (now called SRI International).

STRIPS³ (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. This led to the much refined languages such as ADL (Action Description Language) and PDDL (Problem Domain Description Language) which are even used for problem formulation today.

Planners in the early 1970s generally considered totally ordered action sequences. Problem decomposition was achieved by computing a subplan for each subgoal and then stringing **LINEAR PLANNING**⁴ the sub-plans together in some order. This approach, called linear planning by Sacerdoti, was soon discovered to be incomplete. It cannot solve some very simple problems, such as the Sussman anomaly, found by Allen Brown during experimentation with the **HACKER**² system.

One solution to the interleaving problem was goal-regression planning, a technique in which steps in a totally ordered plan are reordered so as to avoid conflict between subgoals. This was introduced by Waldinger and also used by Warren's **WARPLAN**⁵.

REFERENCES

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