
RESEARCH REVIEW

PLANNING HISTORICAL DEVELOPMENT

This is a short review about development of planning techniques over the years.

Stanford Research Institute Problem Solver(STRIPS):

STRIPS is the first major planning system developed by Richard Fikes and Nils Nilsson from the AI Centre at Stanford Research Institute International(SRI) in 1971. It was designed as planning component of the software for the Shakey Robot project in SRI [1]. The problem solver contributed in the field of Artificial Intelligence(AI) in following two ways [2]:

- A representation language for planning problems. The basic idea is that a world model is modified by operators, which have a set of preconditions and side effects. The side effects are either lists of facts that are added or deleted from the world model.
- The use of two different search algorithms: the first for doing the planning itself which figures out what should be done next on a high-level, and the second for working out what is currently true in the world and if the goals have been satisfied.

Problem Domain Description Language(PDDL):

PDDL was introduced as a computer-parsable, standardised syntax for representing planning problems, used as standard language for International Planning Competition since 1998. It is inspired by STRIPS and Action Description Language(ADL). [3] ADL helps in relaxing some STRIPS restrictions and makes it possible to encode more realistic problem [1]. PDDL2.1 has been designed to be backward compatible with the fragment of PDDL that has been in common usage since 1998. This compatibility supports the development of resources which help to establish a scientific foundation for the field of AI planning. [4]

Warplan:

Warplan was introduced by David Warren in 1974 as a solution to the problem of interleaving by a technique known as goal regression planning, in which steps are reordered to avoid conflicts between the subgoals. It is the first planner to be written in logic programming language (Prolog). WARPLAN is only 100 lines of code. [1]

References:

1. Stuart J. Russell, Peter Norvig (2015), Artificial Intelligence: A Modern Approach (3rd Edition).
2. STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving- Alex J. Champandard
3. Planning Domain Definition Language- Wikipedia.
4. PDDL2.1: An Extension to PDDL for Expressing Temporal Planning Domains- Maria Fox