Research Review

Major planning and search developments are explained the relationship between them and their influence in the A.I. field as follows:

First, Stanford Research Institute Problem Solver (STRIPS) [1] is an automated planner. The automated planner goal was to find a series of operators in a space of models to change an initial state into a model where a given goal can be proven to be true. The key impact of STRIPS in the A.I. field was the representation language it created [2], which is very close to the “classical” planning language. This language showed a set of applicable operators that allowed to transform one state into a different state. This definition of a framework to solve complex planning problems has been a key point to the research in artificial intelligence [3]. STRIPS was primarily used for robot research at SRI (Stanford Research Institute) [1].

Second, Planning Domain Definition Language (PDDL) was the first modeling language to be used intentionally for solving planning problems and it became the standard for the International Planning Competition since 1998 [2]. The PDDL was primarily inspired by STRIPS and ADL (The Action Description Language), which is a simpler representation of STRIPS that allows to encode more realistic problems by relaxing some of the STRIPS restrictions [2]. The usage of a common language for representing and solving planning problems encourages greater reuse of research, allows to analyze different approaches in an easier way.

Third, WARPLAN is a planner implementing a solution known as goal-regression planning to the interleaving problem. WARPLAN was the first planner to be written in a logic programming language (Prolog) [2]. The implementation of a planner using such language was able to showcase the great benefits in terms of reduced complexity that can be achieved by using logic programming languages. WARPLAN is only 100 lines of code [2].

References

1. Richard E. Fikes, Nils J. Nilsson (Winter 1971). "STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving".

2. Stuart J. Russell, Peter Norvig (2010), Artificial Intelligence: A Modern Approach (3rd Edition).

3. Nilsson, N. J. Problem-Solving Methods in Artificial Intelligence. McGraw-Hill Book Company, New York, New York, 1971.