

Planning Historical Developments

In this review, three historical planning and search developments are discussed.

Stanford Research Institute Problem Solver (STRIPS)

STRIPS is the first major planning system introduced by (Fikes and Nilsson, 1971). This automated planner was designed mainly to be used in the planning component of the robots. Its goal is to find a sequence of operators to transform the given initial model in such a way that the given goal formula can be proven to be true.

In another hands, the same name, later used for the formal language for input to the planner. The impact of this representation language was more severe than its algorithmic approach (Russell and Norvig, 2009), which is very closed to the “classical” language.

Planning Domain Definition Language (PDDL)

By relaxing some of the STRIPS which has been discussed before, (Pednault, 1987) introduced Action Description Language or ADL, which made it possible to encode more realistic problems. By getting inspired from ADL, (Ghallab *et al.*, 1998) introduced Planning Domain Definition Language, or PDDL which widely used for solving planning problems. Besides that, PDDL remains the standard for the International Planning Competition since 1998 (Russell and Norvig, 2009). The latest extensions to PDDL described at (Gerevini and Long, 2005) that includes plan constraints and preferences.

The effect of using the common language to represent the planning problems is to encourage the researcher to analyze difference approaches for the same problem. This ability leads to faster progress in artificial intelligence research (Fox and Long, 2002).

WARPLAN

Linear Programming by (Sacerdoti, 1975) which considered totally ordered action sequence, was discovered to be incomplete. A complete planner must allow for interleaving of actions from different sub-plans within a single sequence.

Goal-registration planning, which is a solution to interleaving problem, is a technique which steps in a totally ordered plan to make it reordered. This technique which avoid sub-goals conflicts called WARPLAN (Warren, 1974; Waldinger, 1981). It was the first planner which has been written in login programming language (Prolog). Besides that, it is only 100 lines of codes (Russell and Norvig, 2009) and the best example of the remarkable economy which can gain by logic programming. Also, it was able to showcase the benefits of using Prolog to reduce the complexity of the problem.

References

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