P3-research_review

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History of AI Planning & Search

In this paper, I am going to address an overview on the historical development of AI Planning and Search techniques, more in the classic planning area.

STRIPS (Stanford Research Institute Problem Solver)

STRIPS is an automated planner developed at Stanford Research Institute, and was used in the creation of Shakey the robot. STRIPS could create a plan to enact all the available actions, even though the environment STRIPS (implemented in Shakey) was only allowed in a limited environment. STRIPS lead to the use of representation language for planning problems solving among the AI community, and led to the development of other representation languages as discussed in the following.

ADL (Action Description Language), PDDL (Planning Domain Definition Language)

ADL was inspired by STRIPS, and PDDL was inspired by both ADL & PDDL.
ADL was extended from STRIPS which removed some constraints in STRIPS to be applied to wider range of problems in the real world.
The temptation of creating PDDL was to standardise AI planning languages, which means that PDDL includes STRIPS, ADL and some other AI panning languages.

Graphplan

Graphplan is a general-purpose automatic planning algorithm that takes in an input represented in STRIPS, finds a solution, and returns a sequence of operations for reaching a goal state. It was developed based on ideas from graph algorithms.
When a problem statement is given, Graphplan would create a planning graph, which in a way represents the truth-values flow. Graphplan is built for useful information to be quickly propagated through, and for a plan to be found in the exploitation.

References:

1. **Planning Domain Definition Language - Wikipedia**
2. **Artificial Intelligence: A Modern Approach**, Chapter 10: Classical Planning
3. **Shakey - CHM**
4. **Graphplan Home Page**
5. **Fast Planning Through Planning Graph Analysis**