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Implementing a Planning Search
AIND Project 3

According to Russell and Norving AI planning started from searches into state-space search, control theory and from the practical needs of robotics, scheduling, and other domains. The following is a short review of the major planning and search developments in the Artificial Intelligence.

Stanford Research Institute Problem Solver (STRIPS)

STRIPS is a problem solver created by Richard Fikes and Nils Nilsson [3]. STRIPS is a problem-solving program and it was used in a robot search at SRI (Stanford Research Institute) [3]. STRIPS searches a space to find a series of operators in a space to prove a goal is archived. STRIPS is very close to the "classical" planning language. This language described a set of applicable operators that allowed to transform one state into a different state. This representation of a structure to solve complex planning problems has been an important part of the research in artificial intelligence [2].

Planning Domain Definition Language (PDDL)

The PDDL was essentially motivated by STRIPS, and ADL (The Action Description Language), which is a purer representation of STRIPS that allows encoding more practical problems by relaxing some of the STRIPS restrictions [1]. The PDDL was the first modeling language to be used extensively for doing planning problems and it has remained the standard for the International Planning Competition since 1998 [1]. The acceptance of a common language for designing and solving planning problems promotes higher reuse of research, allows to analyze different approaches in an easier way and consequently helps faster progress in the artificial intelligence field [4].

WARPLAN

WARPLAN was the first planner to be written in a logic programming language[1]. The linear programming planning domain approach was seen to be deficient. WARPLAN is a planner written by David Warren which implements a solution known as goal-regression planning to the interleaving problem. 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, a small fraction of the size of comparable planners of the time. [1].

References

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