Research review

Brief review of historical development in the AI planning and search area

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Summary

This document provides a brief review on three important papers in the field of AI planning and search that were crucial for the development of the AI scientific area. Papers reviewed are:

- PDDL The Planning Domain Definition Language
- Unifying SAT-based and Graph-based Planning
- An Empirical Analysis of Some Heuristic Features for Local Search in LP

PDDL

This 1998 paper provides a formal definition for Problem domain definition language syntax and semantics. PDDL provided pretty universal formalism for actions-goals-preconditions-effects schema that allowed development of domain-independent problem-solvers.

Unifying SAT-based and Graph-based Planning

The paper describes a BLACKBOX planning system that combines constraint satisfaction approach with planning graph ideas. The paper was written as a step towards unifying planning frameworks IJCAI Challenge, 1997 and contains useful discussion on implementation of randomized systematic SAT algorithms for planning problems solving.

An Empirical Analysis of Some Heuristic Features for Local Search in LP

This 2004 paper is a description of the LPG planner. LPG planner showed an outstanding performance during Third International planning competition. The paper contains experimental analysis of stochastic local search procedure that is a core of LPG together with discussion on different heuristics functions used to evaluate search neighborhood used to improve planner performance.