Research Review

Fast-forward (FF)

FF is a domain independent planning system. The main heuristic principle was based on the HSP system (Bonet and Geffner's Heuristic Search Planner, 1999). Both FF and HSP relie completely on forward state space search and heuristic evaluation of states by ignoring delete lists. FF also uses GRAPHPLAN-style algorithm to find an explicit relaxed solution to each search state, employs a novel local search strategy, combining hill-climbing with complete search and employs powerful heuristic pruning techniques which are based on examining relaxed solutions(Hoffmann and Nebel, 2001). It competed in the fully automated track of the 2nd International Planning Competition (ICAPS Competitions). As a result of the competition, FF was granted "Group A distinguished performance Planning System", and it also won the Schindler Award for the best performing planning system in the Miconic 10 Elevator domain, ADL track. The most successful state-space searcher to date is FF (Russel and Norvig, Artificial Intelligence: A modern approach).

SATPlan (Planning as Satisfiability)

SATPlan (H. A. Kautz and B. Selman, 1992) is a method for automated planning. It converts the planning problem instance into an instance of the boolean satisfiability problem, which is then solved using a method for establishing satisfiability. It not only provides a more flexible framework for stating different kinds of constraints on plans, but also more accurately reflects the theory behind modern constraint-based planning systems. It performs a depth-first search by iteratively trying assignments for variables and backtracking when assignments fail. During the search, large parts of the expression can be eliminated due to the current assignments. The algorithm is complete and reasonably efficient.

Action Description Language (ADL)

ADL is an automated planning language proposed by Edwin Pednault (a specialist in the field of Data abstraction and modeling who has been an IBM Research Staff Member in the Data Abstraction Research Group since 1996) in 1987. The language is considered an improvement over STRIPS which relaxed some of the STRIPS restrictions and made it possible to encode more realistic problems (Russel and Norvig, Artificial Intelligence: A modern approach). ADL expressiveness and complexity lies between the STRIPS language and the situation calculus. Despite having more flexibility, ADL can be translated into a STRIPS.

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