Research Review:
AI Planning & Search Historical Developments

Linear Planning

The Stanford Research Institute Problem Solver (STRIPS) was developed by Richard Fikes and Nils Nelson in 1971. The formal planning language used for input of a STRIPS instance includes the initial state with specifications for the goal states and actions. Preconditions and Postconditions are put on each action. STRIPS and similar linear programming systems do not solve simple problems and are considered incomplete by today's expectations.

Interleaving

Interleaving of actions from different problem plans within a single sequence provide more complete planners than the STRIPS process.

Binary Decision Diagrams

BDD is an alternative to linear programming that is used for solving continuous relaxations of a problem. They are compact graphic representations of boolean functions and were often used to introduce circuit designs. They have also been used for genetic programming and sequential pattern mining. A relaxed BDD of limited size to represent a superset of the feasible set overcomes issues with a feasible set growing exponentially in size. Nodes are merged so no feasible solutions are excluded in the relaxed problem set.

References

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P. Norvig, S. Russell. 2017. "Artificial Intelligence A Modern Approach Third Edition." 400 - 402