

Research Review

Artificial Intelligence is an important field of active research. Throughout its history, there have been several milestones in the area of search and planning that shaped the subsequent developments.

An initial problem in the early days, detected in the planners, was that the sequence of their actions was ordered [1]. This linear planning, limited the applications that the planner could actually prove useful as a complete planner should allow for interleaving of actions from different subplans in a single sequence. Partial-order planning (POP), is the first of the chosen developments in this review and is a solution that provides interleaving of actions. The structure of a partial plan constitutes with other development a shift from state – space to plan – space planning.

An important contribution to the field has been the development of GRAPHPLAN algorithm for automated planning [3]. Graphplan takes as input a planning problem expressed in STRIPS and produces, if one is possible, a sequence of operations for reaching a goal state. It is a planning graph aiming to reduce the amount of search needed to find the solution from straightforward exploration of the state space graph and it was order of magnitudes faster than the existing partial – order planners of the time. Such a planner, has contributed to raise the level of performance of planning systems by clarifying the representational and combinational issues involved and by development of useful heuristics [4].

Another development, are linear programs (LPs) and integer programs (IPs) have a long history in the field of operations research and have been used to model a large number of problems in resource allocation, facility location, distribution, production, reliability, and design[5]. One potential advantage of using LP and IP techniques in planning is that they quite naturally allow the incorporation of numeric constraints and objectives into planning domains. The size of the problems that can be solved has increased by several orders of magnitude over the years.

Undoubtedly, the field is very active and the mentioned developments have some contribution in shaping its evolution.

References

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