AI Planning Research Review

In a 1998 paper named "Recent Advances in AI Planning", it is said that the GraphPlan algorithm by Blum and Furst is one of the most exciting development in AI planning[1]. GraphPlan is an object construct that allows abstraction of ideas such as states, actions, and their levels. Compared to other planners, GraphPlan is many orders of magnitude faster than previous system[1]. One of the best perks of GraphPlan is that it can be used to automate heuristics for planning problems that are specified in the STRIPS framework[2], which leads to our next big development in AI planning.

STRIPS was developed in 1971by Richard Fikes and Nils Nilsson at Stanford Research Institute[2]. STRIPS is an automated planning encoding that comprise of an initial state, the goal state, and a set of actions defined by preconditions and post-conditions. This basic framework paves the way for researchers to build more advance planning languages. In an article about "AI Planning Historical Developments", it is stated that all planning problems can be formulated with STRIPS[2]. GraphPlan and STRIPs lay out the structure and framework for solving planning problems with automated heuristics, thus gave rise to developments in heuristic search planning – our next big development in AI planning.

Heuristic search planning was not new to the field, but only became prominent when STRIPS and GraphPlan allow for automation of heuristics[3]. Automation techniques revolve around ways of traversing the GraphPlan by exploiting the structure and STRIPS encoding of the problem. Many popular planning searches nowadays are heuristic forward searches with auto generated heuristic[3]. Heuristic search planning is an example of integration of multiple techniques that were developed over decades of research in the field of AI.

Citations

[1] Weld, Daniel S. “Recent Advances in AI Planning.” Published 8 Oct. 1998, homes.cs.washington.edu/~weld/papers/pi2.pdf.

[2] Shrott, Ryan. “AI Planning Historical Developments – Towards Data Science – Medium.”*Medium*, Towards Data Science, 4 Sept. 2017, medium.com/towards-data-science/ai-planning-historical-developments-edcd9f24c991.

[3] Zuñiga, Juan Carlos, et al. “Progress in AI Planning Research and Applications (PDF Download Available).” *ResearchGate*, 19 Oct. 2017, www.researchgate.net/publication/242415929_Progress_in_AI_Planning_Research_and_Applications.