

Review on the Historical Developments in the field of AI planning and search.

This research review shines a light on three historical development in AI planning and search.

### **1. WARPLAN**

A case-based reasoning system that used a "skeleton model". WARPLAN used promotion and chronological backtracking to solve the interleaving problem. This approach did away with linear programming [1], which was a norm in the planning domain at the time. It was written in about 100 lines of PROLOG, making it far smaller than other planners of the time [1].

### **2. Stanford Research Institute Problem Solver (STRIPS)**

Devised as an improvement upon situation calculus by Richard Fikes and Nils Nilsson. STRIPS represents the world as a set of formulae in first-order logic. Each state in the search space consists of a world model and set of goals to be achieved. [2] STRIPS had a profound impact in developing the classical "planning" language, forming the backbone of planning research in the future.

### **3. GRAPHPLAN**

GRAPHPLAN is an automated planning algorithm developed by Avrim Blum and Merrick Furst in 1995 [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. Graphplan always returns a shortest- possible partial-order plan, or states that no valid plan is achievable. [3]

## **REFERENCES**

1. Stuart J. Russell, Peter Norvig (2010), Artificial Intelligence: A Modern Approach (3<sup>rd</sup> Edition)
2. Fikes, Richard E., and Nils J. Nilsson. "STRIPS: A new approach to the application of theorem proving to problem solving." *Artificial intelligence* 2.3-4 (1971): 189-208.
3. A. Blum and M. Furst (1997). Fast planning through planning graph analysis. *Artificial intelligence*. 90:281-300.