

# Research Review of the Developments of AI Planning and Search

*This is a short review about three major developments in the field of  
Artificial Intelligence (AI) planning and search.*

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

In 1971, at the Stanford Research Institute (SRI), Richard Fikes and Nils Nilsson created STRIPS. STRIPS became the first major planning system and was the main planning component for SRI's Shakey robot project. The objective of this automated planner was to use its inputs (initial state, goal states, and a set of actions) to determine if the goal could be reached from the initial state using just the given actions [1].

The greatest impact of STRIPS was its language that was used to solve planning and search problems. Most modern-day languages that are used for expressing automated planning problems are built upon STRIPS' language, commonly referred to as action languages. Central to a great deal of research in artificial intelligence is this framework to solve complex planning problems [2].

## *Action Description Language (ADL)*

ADL is an excellent example of an action language that is used most commonly in robots as an automated planning and scheduling system. It originated in 1987 from Edwin Pednault, an IBM Research Staff Member, and is regarded as an advancement of STRIPS. It extended the syntax of STRIPS' action schemata by dropping some of its restrictions and allowing more complex problems to be encoded. In addition to increasing the domain encoding convenience, ADL reduced the required size of domain descriptions [3].

## *Planning Domain Definition Language (PDDL)*

PDDL was developed by Drew McDermott and his colleagues in 1998 to make the International Planning Competition, of that year, possible. For this competition to be possible and to accelerate the progress of this field, it was necessary to standardize AI planning languages, PDDL did just that. Originally inspired by STRIPS and ADL, PDDL has continued to evolve and several extensions have been built off it, such as including features like non-propositional state-variables (NDDL) and notation to create ontologies (MAPL) [3].

## *References*

- [1] Richard E. Fikes, Nils J. Nilsson (Winter 1971). "STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving".
- [2] Nilsson, N. J. Problem-Solving Methods in Artificial Intelligence. McGraw-Hill Book Company, New York, New York, 1971.
- [3] Stuart J. Russell, Peter Norvig (2010), Artificial Intelligence: A Modern Approach (3rd Edition).