

# Research Review

## Development in the Field of AI Planning and Search

The AI planning and search can be dated back a long time ago. It comes from the practical needs of robotics, scheduling and many other domains. Through out the long research history of AI planning and search, there are many notable milestones. In this review, three out of many major milestones are selected to be discussed. While these major achievements are important and crucial, other achievements are with equal importance.

### Stanford Research Institute Problem Solver (STRIPS)

STRIPS is the first major planning system developed by Richard Fikes and Nils Nilsson [1]. STRIPS was designed as the planning component of the software for the Shakey robot project at SRI [2]. The goal of this planner was to find a path of operations in the space of models to make the initial state into model with which the final goal can be true.

It is worth mentioning that the greatest impact to the AI research made by STRIP is not the algorithm it used but the representation language. The language that STRIP uses is very close to the “classical” language. This language describes a series of possible operators that will result in the original state altered into another state. The way of describing problems and possible solutions has become the foundation of later AI languages.

### Planning Domain Definition Language (PDDL)

The PDDL was the first computer-parsable, standard syntax modelling language for the planning problems. It has been used as the standard language for the International Planning Competition since 1998 [2]. This language was inspired by the language that STRIPS used as well as the Action Description Language (ADL) that was developed by Pednault in 1986 [2] by relaxing some of the STRIPS restrictions and made it possible to encode more realistic problems.

The impact of PDDL language is that it has standardized the representation and modelling of the planning problems and thus increased the efficiency and speed of researches and studies to the problems. It has also provided a uniformed way for all the researchers to communicate with.

## Heuristic Search Planner (HSP)

The HSP was first developed by Bonet and Geffner in 1999 [3] based on the idea of heuristic search. The first version of HSP performs forward from the initial state to the goal state using an heuristic function that provides and estimate of distance to the goal [3]. A later version of HSP called HSPR [4] performs the search in the backward direction.

The impact of HSP is that it was the first planner that made state-space search practical for large planning problems. It also inspired many later state-space searchers such as Fast Forward (FF) [5] and FASTDOWNWARD [6].

## Bibliography

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