# AIND-Planning - Research Review

Planning and search has always been an important field in AI, along with other fields like computer vision, natural language processing, robotics, etc. In this research review, I will highlight three important historical developments in the field of AI planning and search.

## Stanford Research Institute Problem Solver (STRIPS) (Fikes and Nilsson, 1971)

Stanford Research Institute Problem Solver (STRIPS) was a new problem solving program at that time which attempted to model and solve automated planning problems. The framework consists of important concepts, such as initial states, goal states, actions, preconditions and postconditions. However, the representation languages used by STRIPS is much more influential than the solver itself and has been the base of most of the languages used in the AI classical planning domain, also called as action languages later on.

## Action Description Language (ADL) (Pednault, 1986)

As STRIPS was considered not expressive enough for real world domains, Action Description Language (ADL) was introduced. It extends the syntax of STRIPS and some major new concepts include:

1. Supporting negative literals in state;
2. Open world assumption (i.e. unmentioned literals are unknown) instead of close world;
3. Allowing disjunction in goals; and
4. Supporting equality and types.

## Problem Domain Description Language (PDDL) (Ghallab et al., 1998)

Problem Domain Description Language (PDDL) attempts to standardize AI planning languages. It is inspired by STRIPS and ADL. It was developed mainly because of International Planning Competition (IPC) as a common language is needed to specify the problems. One of the important concepts is that PDDL separates the model of planning problems into two major parts:

1. Domain description, which includes predicates and actions; and
2. Problem description, which includes objects, initial states and goal specification.

The latest version of the language is PDDL 3.1, which introduced fluent and it is still widely used in the AI planning field.

It has been tens of years of collective effort in the refinement and evolution for action languages alone so that the field of AI planning itself can be improved and advanced and more amazing research can be carried out continuously.

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References:

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