AIND: Development in AI Planning and Searching (A Research Review)
By Param Shah

In this short review, I have put down the major planning and search developments in the field of AI and also described the relationship between them.

1.   Stanford Research Institute Problem Solver (STRIPS)

     STRIPS is an automated planner developed by Richard Fikes and Nils Nilsson in 1971 at Stanford Research Institute.
     The aim of STRIPS was to find a sequence of operators in a space of world models to transform a given initial world model model into a model in which a given goal formula can be proven to be true.

     Originally STRIPS was a name for a planning component in software used in a Robot named "Shakey" Developed by the Stanford Research Institute.
     STRIPS gave Shakey the ability to analyze commands (goals) and break them down into a plan of all needed actions.
     The significance of STRIPS in the field of artificial intelligence was greater in terms of the representation language that it used than its algorithmic approach.
     This representation language is very close to the "classical" planning language. STRIPS as a classical planning language is made up of states, goals and set of actions.

2.   PLANNING DOMAIN DEFINITION LANGUAGE (PDDL)

     As mentioned by Russell and Norvig, the STRIPS language was a good starting point for further development in the planning languages.
     ADL (Action Description Language) was the first extension of STRIPS language which removed some of STRIPS constraints to handle more realistic problems.

     STRIPS and ADL were inspiration for another extension of the representational language, PDDL (Planning Domain Definition Language). This was an attempt to standardize planning languages. It was first developed by Drew McDermott and his colleagues in 1998.

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PDDL evolved thereafter and has been the standard planning language for the International Planning Competition (IPC) since it was introduced.

3. GRAPHPLAN

Graphplan is an algorithm for automated planning developed by Avrim Blum and Merrick Furst in 1995.

It is a general purpose planner that makes use of Graph Algorithms to solve STRIPS-styled domain problems.

Given a problem statement, Graphplan constructs and annotates a structure known as a Planning Graph in which a plan is "flow of truth values" through the graph.

The property this graph that useful information for constraining search can be quickly propagated through the graph as it is being built, is used and exploited to search for a plan.

The input to Graph Plan is a planning problem expressed in STRIPS and the output is a sequence of operators for reaching a goal state.