Important Development In AI Planning And Search

The history of AI and planning developed over the years and introduced many ways to describe the planning problem in automated way for the computer to understands from these promising approaches are:

STRIPS

It is automated planning technique that execute domain and problem to find a goal. It is composed from: initial state, goal states and set of actions that include preconditions and postconditions.

PDDL

Planning Domain Definition Language (PDDL) is a recent planning domain and problem description languages inspired by STRIPS, it is contains STRIPS, ADL and more advanced description.The components of PDDL are objects, Initial state, goal specification, actions and predicates.

And for the computer to structure the planning problem and search for the goal it use following algorithms:

GRAPHPLAN

Graph structure algorithm invented by Avrim Blum and Merrick Furst in 1995. It takes as input a planning problem expressed in STRIPS and produces a sequence of operations for reaching the goal.
In graph plan the nodes are actions and atomic facts in structure of levels, this way is efficient and reduce the search for solution from straightforward exploration. For GRAPHPLAN to be efficient it required a good heuristic function.

Satplan

It is efficient modern planning algorithms for classical planning problems. In Satplan, the structure is a clauses, it convert the planning problem into an instance of the Boolean satisfiability problem.

References:

- STRIPS: https://en.wikipedia.org/wiki/STRIPS
- PDL: http://www.cs.toronto.edu/~sheila/2542/w09/A1/introtopddl2.pdf
- planning as heuristic search new results, Blai Bonet ∗, Héctor Geffner