AI Planning and Search Development

In this research paper, we will introduce three major developments in AI planning and search history.

STRIPS:
STRIPS stands for the Stanford Research Institute Problem Solver. It is an automated planning agent, which is commonly used in the game world. It executes a domain and problem to find the goal state. Developers provide objects, actions, preconditions and effects for STRIPS to describe the world.

After describing the world, STRIPS will be given a problem set that consists of an initial state and goal state. So, STRIPS can use those given conditions to search all possible states and execute different actions until it finds the goal state [1].

PDDL:
PDDL stands for Planning Domain Definition Language, which is a common language for STRIPS. It allows developers to use English to word the code, so that it will provide high readability and maintainability. It mainly contains the following tasks: objects, predicates, initial state, goal specification and actions. It uses a domain file for predicates and actions, and uses a problem file for objects, initial state and goal specification [2].

ADL:
ADL is an automated planning and scheduling system for robot development. It is an advancement of STRIPS. In 1987, ADL was proposed by Edwin Pednault, who is a specialist in the field of Data abstraction and modeling who has been an IBM Research Staff Member in the Data Abstraction Research Group since 1996 [3].

ADL was based on STRIPS, but was improved with more features like allowing effects of an operator to be conditional. ADL is an action language, that can support both positive and negative literals. Goals involves in conjunctions and disjunction and it allows the conditional effects. Besides that, the equality predicate was implemented in ADL [3].

References:

[1] Artificial Intelligence Planning with STRIPS, A Gentle Introduction (2015), by Kory Becker @http://www.primaryobjects.com/2015/11/06/artificial-intelligence-planning-with-strips-a-gentle-introduction/

[2] Historical Intro to AI Planning Languages (2017), by Mirek Stanek @ https://machinelearnings.co/historical-intro-to-ai-planning-languages-92ce9321b538

[3] *Edwin Pednault. "IBM Research Website: Pednault". Retrieved 29 March 2013.*l