# Important historical developments in the field of AI planning and search

**Abstract:** To give a brief about the following three important historical developments in the field of AI planning and search

1. STRIPS
2. ADL
3. PDDL

## 1. STRIPS:

SRI (**S**tanford **R**esearch **I**nstitute) was developing a mobile robot system called *SHAKEY* during 1966-72 which could do required planning, route finding and rearranging of simple objects. This milestone has made several other AI advancements possible. STRIPS (**ST**anford **R**esearch **I**nstitute **P**roblem **S**olver) is the automated planner which powered the *SHAKEY*'s software components to do the planning effectively to achieve the goal. STRIPS comprises of the following,

- An Initial State
- Goal States – A state which is the terminal state of the planning
- Actions – that leads from one state to another state including the goal state and every action has pre-conditions and post-conditions

STRIPS works based on the assumptions that the action applied on a state produces the explicitly defined positive effects.

## 2. ADL:

ADL (Action Description Language) is an automated planning and scheduling system which is an advanced version of STRIPS. The following table summarizes the differences between STRIPS and ADL.

| S.No | STRIPS | ADL |
|---|---|---|
| 1 | Only allows positive literals | Supports both positive and negative literals |

| | | |
|---|---|---|
| 2 | Closed World Assumption – Unmentioned literals are false | Open World Assumption – Unmentioned literals are unknown. |
| 3 | Goals support conjunctions alone. | Both conjunctions and disjunctions supported in Goals |
| 4 | Do not support equality | Equality predicate is in-built. |
| 5 | Types are not supported | Types are available |
| 6 | Conditional effects not supported | Conditional effects supported |
| 7 | Goals can only have ground literals | Quantifiable variables allowed in Goals. |

**3. PDDL:**

PDDL (**P**lanning **D**omain **D**efinition Language) is another extension of STRIPS and ADL which standardized the planning problem definition and well adopted by the IPC (**I**nternational **P**lanning **C**ompetition) and much widely used for defining the planning problems. This adaption made possible to compare and improve the systems and approaches and helped the faster progress in the field. PDDL has evolved much since its introduced in 1998-2000.

**References:**


http://aima.cs.berkeley.edu/2nd-ed/newchap11.pdf

https://www.youtube.com/watch?v=mQ7M-zhiu7U

http://www.cs.uml.edu/~holly/91.549/readings/629.pdf

https://en.wikipedia.org/wiki/Action_description_language

https://en.wikipedia.org/wiki/STRIPS

https://en.wikipedia.org/wiki/Planning_Domain_Definition_Language