AI Planning and Search – Historical Perspective

Introduction

The AI planning and search fields looks to solve a lot of general planning and searching problems. Over the years a lot of work has been done on defining problems, generic algorithms to solve these problems. A lot of the recent work has been done around in optimizing the search mechanism with help of heuristics.
In this report, we will look at three major historical improvements in the Planning and Search

STRIPS (1971)

STRIPS was an attempt to apply the techniques of Theorem proving to problem solving by Richard E. Fikes and Nils J. Nilsson of Stanford Research Institute. STRIPS was a problem solver and had an associated formal language by the same name. The importance is to develop a language in which we can define 'Real World Problems'.
Improvements over STRIPS led to programming languages – **Planning Domain Definition Language** and **Action description language.**
In many aspects STRIPS laid down the model for modern AI Planning and Search problem definition.

GraphPLAN (1997)

It essentially generated a Graph out of a planning problem and solved the problem backwards based on regression, ignoring those facts which are not feasible.
It could track the flow of solving a planning problem.
This lead to improvements in understanding of the planning problems and development of like SAT solvers.

Heuristic based Search (2000)

Planning and Search based problems are essentially State Search Problems. Predicting the probability of a state to produce a result without expanding the state has led to reduced running times.
This is has led to reduced times and taking problems with large search space and variables.

References

1- Richard E. Fikes, Nils J. Nilsson (Winter 1971). "STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving" (PDF)
2- A. Blum and M. Furst (1997). "**Fast planning through planning graph analysis**" (PDF)
3- Bonet and Geffner (2000). "Planning as heuristic search" (PDF)