Artificial Intelligence Planning with STRIPS, A Gentle Introduction

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Introduction:

Imagine you're developing a video game where the player has to find magical items, build a weapon, and then attack monsters. This would be relatively straight-forward to create. Just throw some magical items around the map, let the player move around to discover them, and leave it to the player to figure out what combination to put together to build a powerful weapon. Easy. There is a more intelligent approach. Through the use of artificial intelligence planning, you can program the computer to formulate a plan. For "easy" difficulty, the computer could have the goal of building a club. For "hard", the computer could build a bazooka. But, how do we give the computer this kind of planning intelligence?

What is STRIPS?

The Standford Research Institute Problem Solver (STRIPS) is an automated planning technique that works by executing a domain and problem to find a goal. With STRIPS, you first describe the world. You do this by providing objects, actions, preconditions, and effects. These are all the types of things you can do in the game world.

Once the world is described, you then provide a problem set. A problem consists of an initial state and a goal condition. STRIPS can then search all possible states, starting from the initial one, executing various actions, until it reaches the goal.

A common language for writing STRIPS domain and problem sets is the Planning Domain Definition Language (PDDL). PDDL lets you write most of the code with English words, so that it can be clearly read and (hopefully) well understood. It's a relatively easy approach to writing simple AI planning problems. The PDDL was the first modeling language to be used widely for solving planning problems and it has
remained the standard for the International Planning Competition since 1998 [2].

The PDDL was primarily inspired by STRIPS (discussed above), and ADL (The Action Description Language), which is a simpler representation of STRIPS that allows to encode more realistic problems by relaxing some of the STRIPS restrictions [2]. The usage of a common language for representing and solving planning problems encourages greater reuse of research, allows to analyze different

What can STRIPS do?

A lot of different problems can be solved using STRIPS and PDDL. As long as the world domain and problem can be described with a finite set of actions, preconditions, and effects, you can write a PDDL domain and problem to solve it.

For example, stacking blocks, Rubik's cube, navigating a robot in Shakey's World, Starcraft build orders, and a lot more, can be described using STRIPS and PDDL.

Reference : http://www.primaryobjects.com/2015/11/06/artificial-intelligence-planning-with-strips-a-gentle-introduction/