Research Review

STRIPS, a retrospective (Artificial Intelligence 59, 1993)

**Richard E. Fikes and Nils J. Nilsson**

This paper reviewed the development of the STRIPS (STanford Research Institution Problem Solver) automatic plan generator and execution monitor, which provided a framework for classical planning problems. This project not only contributed to the development of the STRIPS framework, but also provided motivation for the discovery of A\* Search, the ABSTRIPS planning system, macro-operator problem solving, “triangle tables” for plan execution, and region-finding scene analysis programs. As the paper suggests, what made the STRIPS design so successful was the integration of state-space heuristic searches, and the ability to prove resolution theorems. This resulted in the key contribution of the project: The STRIPS operator representation, and an algorithm for modeling effects of an operator based on the assumption that a plan operator only affects the aspects of a world explicitly mentioned in the operators add/delete lists. STRIPS was an extremely important hallmark in Artificial Intelligence, and provided the basis for many of the techniques covered in lecture.

The FF Planning System: Fast Plan Generation Through Heuristic Search (Journal of Artificial Intelligence Research, 2001)

**Jorg Hoffmann and Bernhard Nebel**

This article described the FF (Fast Forward) planning system, a forward state space search that uses a heuristic that ignores delete lists. What interested me the most in this paper was how effective the heuristic method behind the algorithm, but only on a large class of planning tasks – not all planning tasks. The paper had also stated that the search for a way to formally characterize the structure of that particular class of planning tasks was the continuing work that needed to be done. There was also a section that was devoted to describing the example problems within the STRIPS framework, which further goes to show how influential of a framework it was in AI. The GRAPHPLAN heuristic estimator is polynomial.

On the Complexity of Planning in Transportation Domains (6th European Conference on Planning, 2001)

**Malte Helmert**

Admittedly, a lot of this paper went over my head. It was very interesting, though, to see a section devoted to describing the problem in terms very close to the PDDL framework we reviewed in lecture. From what I gathered, this paper gave more structure to the classes of planning problems that had a domain that dealt with transportation. Reading through the aforementioned section, this paper definitely made me realize how useful a language like PDDL is when communicating and describing planning problems.