This seminal paper, STRIPS: A New Approach to the Application of Theorem Proving to Problem Solving by Richard E. Fikes and Nils J. Nilsson, introduced the STRIPS system, which marked a significant milestone in the field of automated planning and artificial intelligence. This paper describes a new approach to integrating theorem proving and problem solving, using formal logic for representing and solving complex problems in an efficient manner.

**Overview of STRIPS**

STRIPS represents the world, goals, and actions in a formal structure designed to handle the challenges that arise from automated planning. It then models the world's state using FOPC and represents the actions by a set of operators, each defined with preconditions (what must hold for the action to be executed) and effects (the way it changes the world). This representation permits the system to deduce sequences of actions, or plans, which accomplish given goals from an initial state.

The STRIPS framework executes a goal regression heuristic, reasoning in reverse direction starting from the wanted goal state to identify a sequence of actions that leads the initial state to the goal. By simplifying the application of theorem proving, STRIPS reduces the computational complexity often associated with reasoning in formal logic systems.

**Key Contributions**

Representation of Actions: The STRIPS operator framework introduced a practical way to model actions using preconditions and effects that simplified the reasoning process and allowed the system to focus on relevant facts.

Efficiency in Problem Solving: STRIPS showed the world's state could be managed efficiently by keeping the reasoning limited to those actions which, directly or indirectly, would have an impact on the current state. In this way, it didn't keep doing redundant computations.

Scalability: Since the STRIPS planner was performing purely goal-directed reasoning, it could tackle larger and more complex problems compared to earlier work.

**Applications**

The STRIPS system was initially applied within the Shakey robot project at the Stanford Research Institute. Shakey has been an autonomous robot capable of using planning and performing actions within a structurally organized environment. Such successful application showed the usefulness of STRIPS for robotic planning and influenced subsequent AI research in directions related to automated planning, robotics, and intelligent systems.

**Significance and Legacy**

The STRIPS formalism has had a lasting impact on AI, forming the basis of many modern planning systems. The operator representation is foundational from robotics to logistics and game AI. Beyond that, the goal regression technique introduced by STRIPS has influenced a variety of algorithms in decision making and search.

In a nutshell, the STRIPS framework represented an innovative approach to automated planning because it combined logical reasoning with pragmatic problem-solving strategies. It has heralded great advances in AI and established a standard against which later work in planning and automated reasoning is measured.