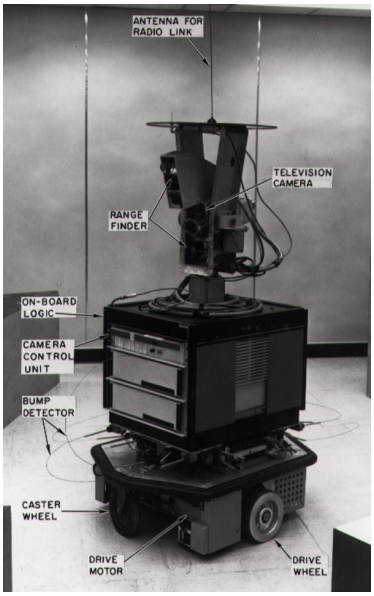
Research Review

STRIPS and Shakey the Robot

Shakey the robot is known to be the first robot to embody artificial intelligence. It was the first robot that was able to reason about its own decisions with external feedback. Shakey's abilities included visual analysis, route finding, object manipulation and more. Shakey's hardware was not very impressive, but it's software was a game-changer in AI.



STRIPS (Stanford Research Institute Problem Solver) was developed by Richard Fikes and Nils Nilsson in 1971. It is known to be the first representation language for planning problems. STRIPS, as a classical planning language, is composed of states, goals and a set of actions (including pre-conditions and post-conditions). The STRIPS planner gave Shakey the ability to analyze commands (given goals) and break then down into a plan of all needed actions.

ADL

ADL (Action Description Language) is an improvement to STRIPS which relaxes and removed many of the constraints found in STRIPS and is able to handle more realistic problems. Particularly, ADL adds the support of:

- Negative Literals (¬x)
- Equality (x == y)
- Types (p: Plane)
- Quantified Variables (e.g. $\exists$ x At (P1, x) $\wedge$ At(P2, x))
- conditional effects
- disjunctions in goals

Both STRIPS and ADL inspired an extension of representational languages, which would be able to standardize planning domain modeling.

PDDL

PDDL (Planning Domain Definition Language) was developed in 1998 by Drew McDermott and his colleagues. It was introduced as a computer-parsable, standardized syntax for representing planning problems. This attempt to standardize planning

languages, made the International Planning Competition (IPC) series possible. PDDL contains the features of STRIPS, ADL and much more other representational languages.