Research Paper

AI Planning

AI planning is one category of algorithms inside the AI field. The AI planning algorithms are used for realizing “strategies or action sequences, typically executed by intelligent agents, autonomous robots and unmanned vehicles” (Automated planning and scheduling, Wikipedia). Three important advancements in the field in the past decades include: STRIPS, FF and GRAPHPLAN.

STRIPS, developed by Fikes and Nilsson in 1971 (STRIPS, Wikipedia), is monumental for being the first major planning system. A programming language from the same name was also developed as a consequence of the STRIPS planner. It was designed to be used for a robot, called Shakey. It used a state-space search approach to come up with sequences of actions.

FF stands for Fast-Forward Planning System, was the most successful planning system in the APIS-2000 (an AI competition) (Hoffman, 2001). FF implements a forward state-space search “guided by a heuristic that estimates goal distances by ignoring delete lists.” (Hoffman, 2001).

GRAPHPLAN, developed by Blum and Furst in 1995, introduced a planning graph to search instead of the state-space search (Graphplan, Wikipedia). The use of the planning graph made GRAPHPLAN orders of magnitude faster compared to other partial-odored planners of the time (Russel-Norvig, 2009). The planning graph changed nodes from representing states into actions and atomic facts, and edges change from meaning reachability between states into relations between the atomic facts and actions.

REFERENCES

AI Magazine Vol 22, No 3, **Jorg Hoffman**, Fall 2001
Introduction to Artificial Intelligence, 3rd Edition, **Stuart Russel and Peter Norvig**, Fall 2009